

PERSONAL SOFTWARE

\$4.85

AUGUST 1984 • THE TOP 20 PROGRAMS RE

This Month
We 'Test Drive':

The PFS Family • PAGE 66
Multiplan • PAGE 78
Music Construction Set
PAGE 87

Bank Street Writer • PAGE 93

This Month 126 New
Products Were Released

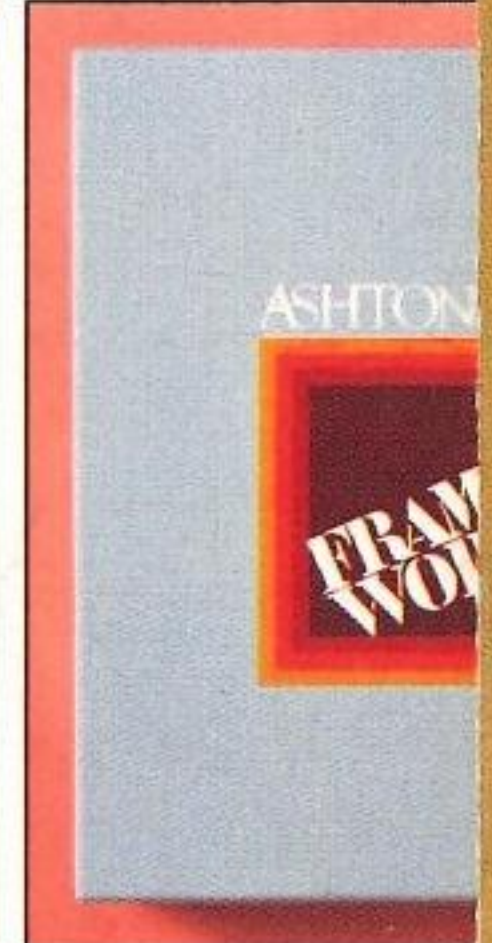
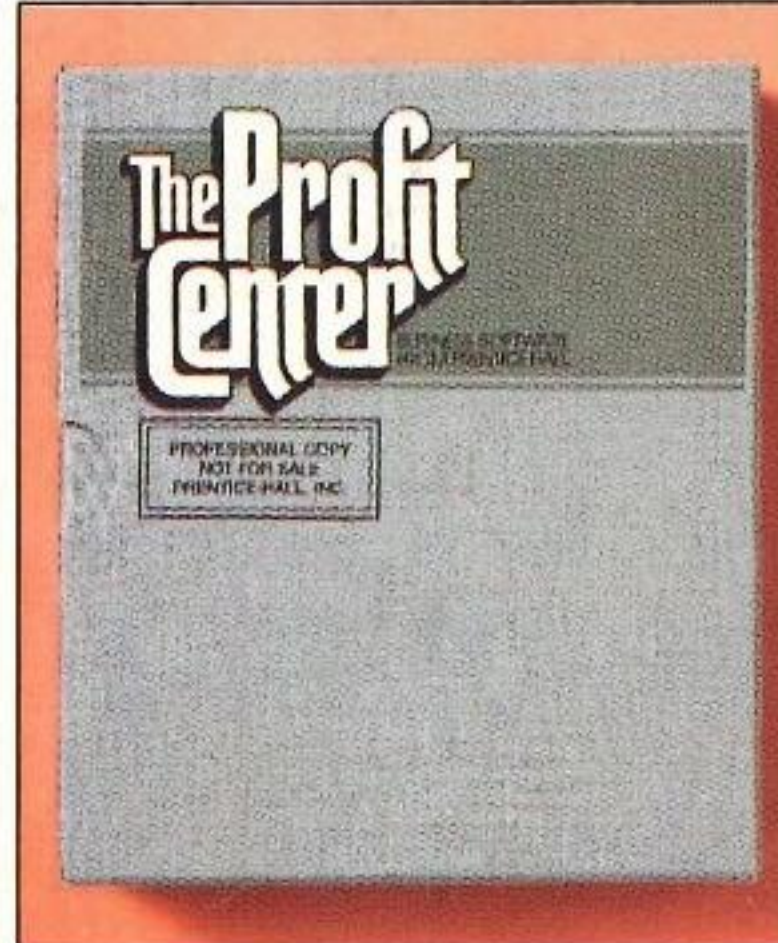
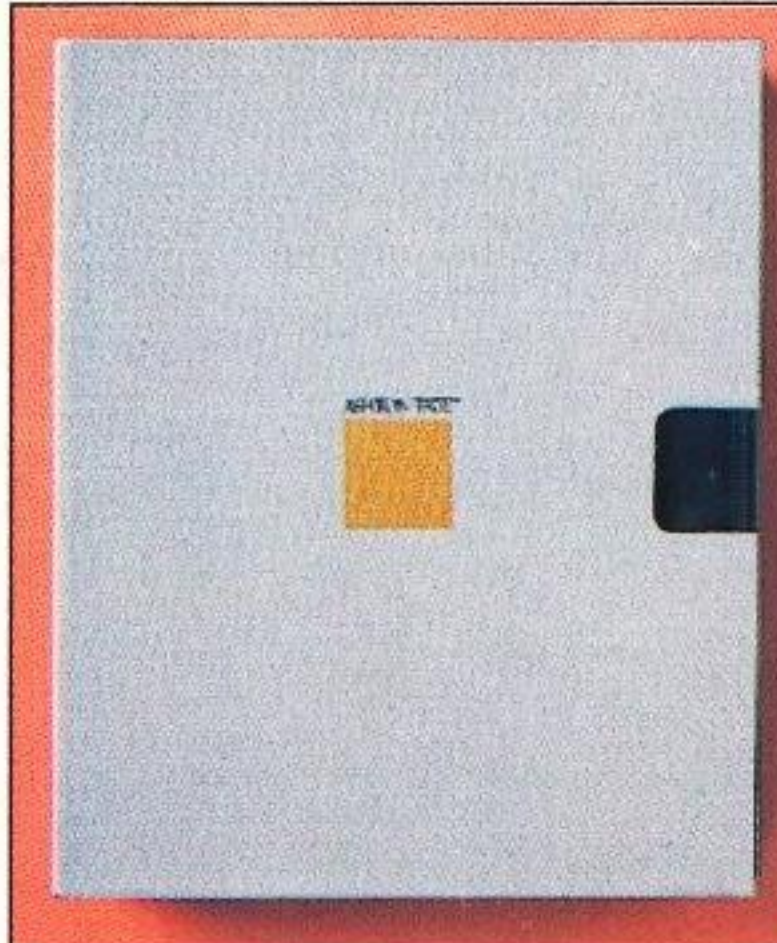
DETAILS BEGIN ON PAGE 11

This Month's 90
Best-Sellers Were Led
By Lotus 1-2-3

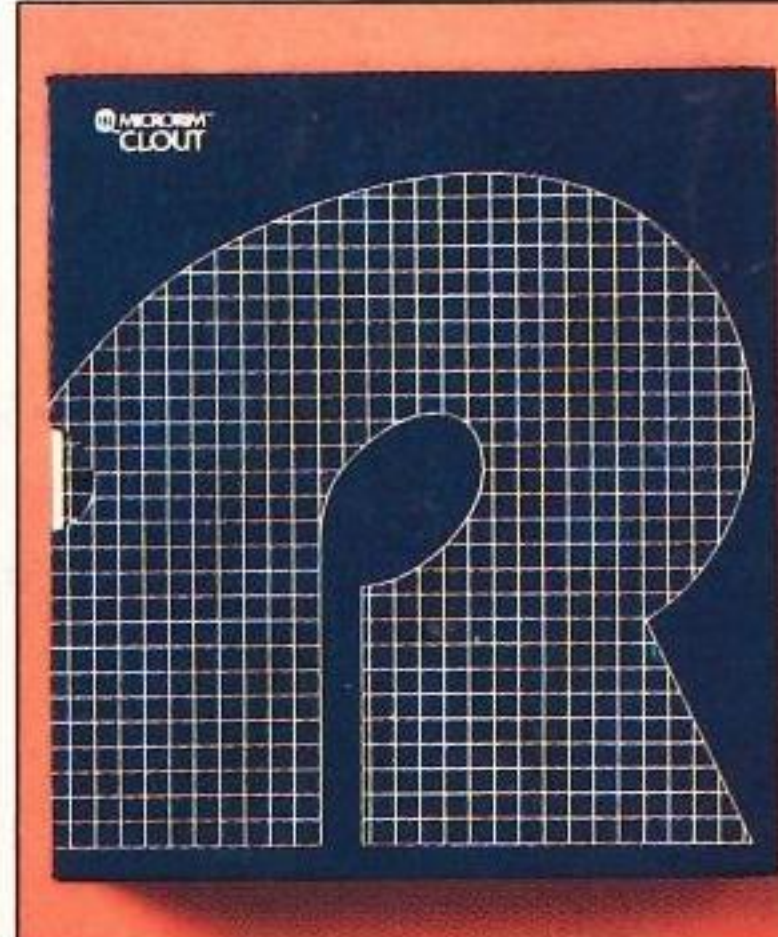
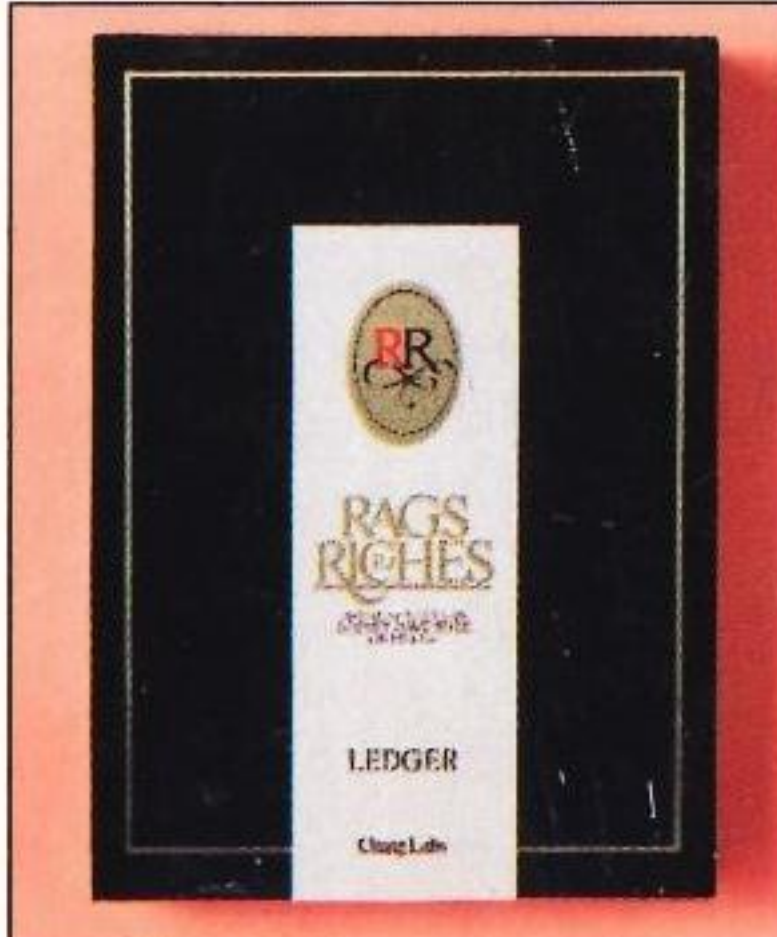
DETAILS BEGIN ON PAGE 61

A Buyer's Guide To
Relational Data Bases
BEGINS ON PAGE 97

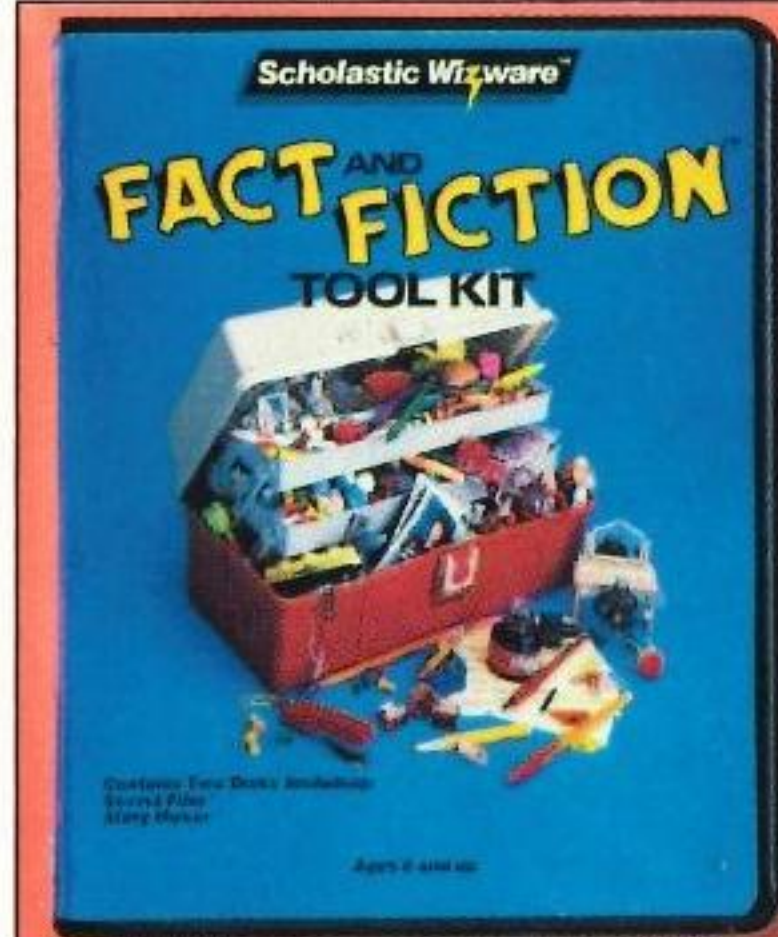
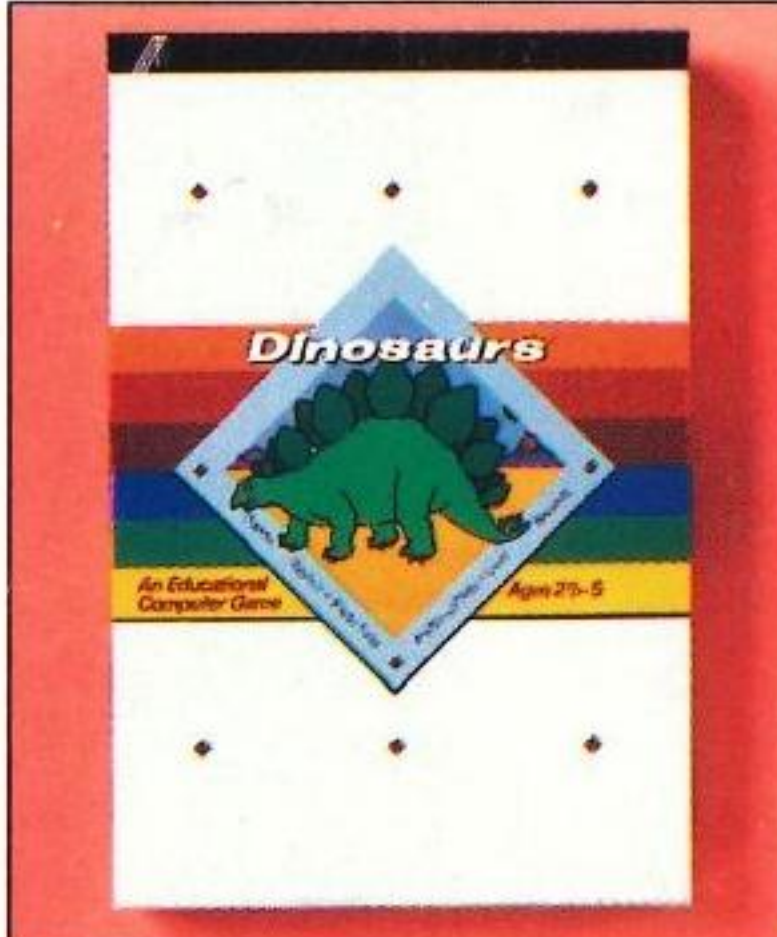
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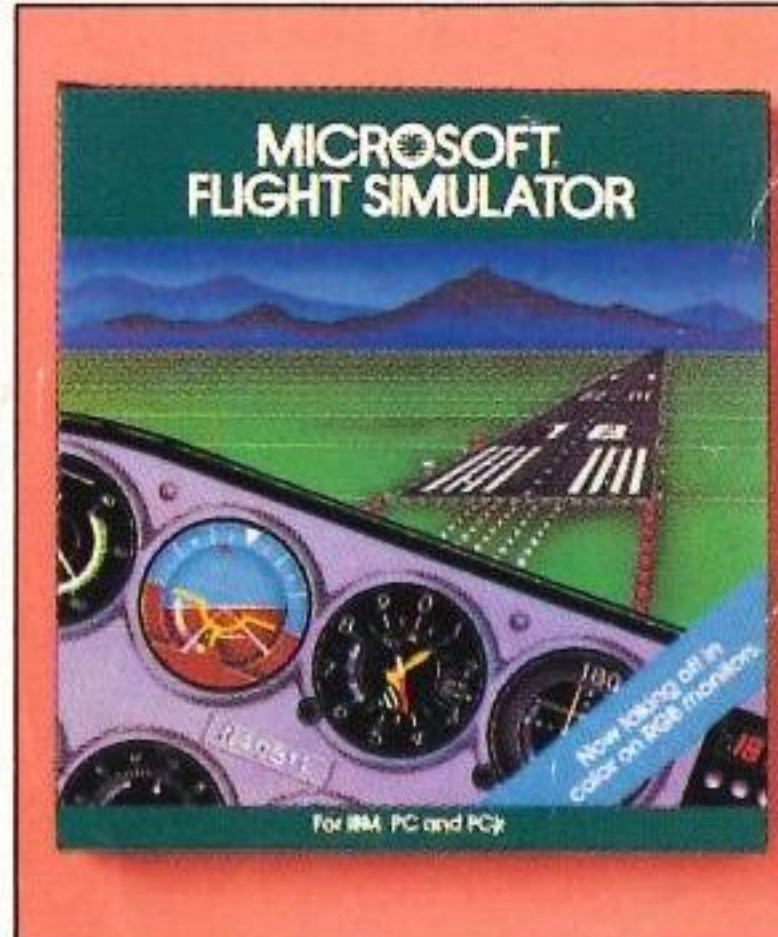
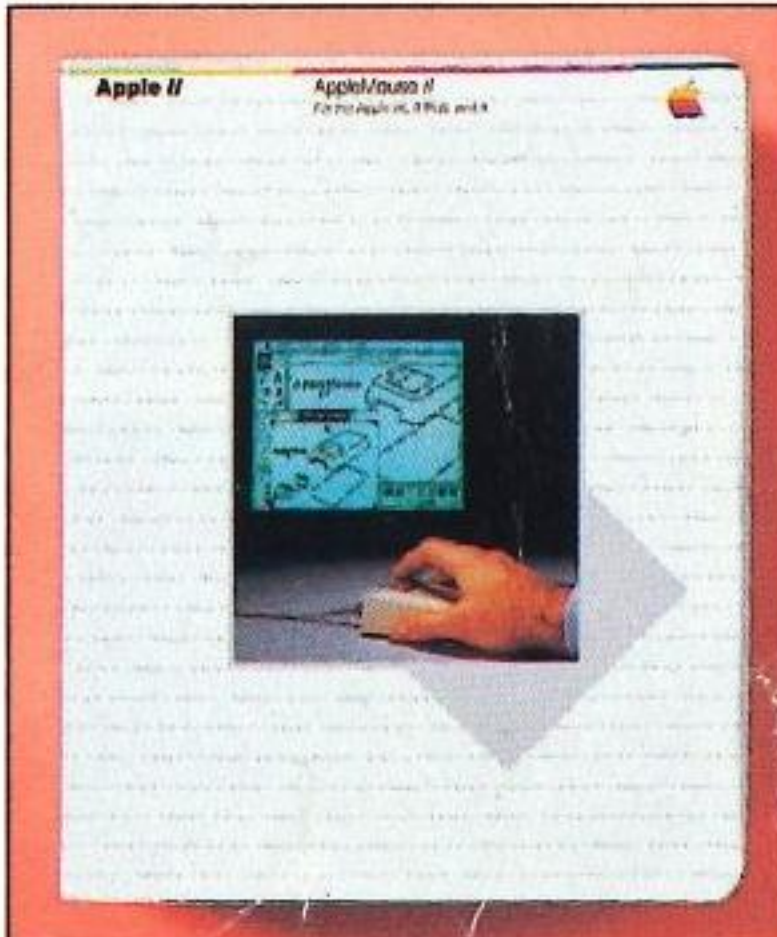
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COMMAND OF THE LANGUAGE: \$100

It's staggering.

It can change the way you work, the way you think, the way you live.

It can help you create, re-create, and replicate.

It's for secretaries, statesmen, salespeople, students, songwriters and story-tellers.

It is more than just an incredible time-saver (although it certainly is that, too).

Much, much more.

It's a tool that propels you into creativity, letting you set down an idea, rearrange it, edit it, improve it, decide you liked it better the first time, change Smith to Jones whenever Smith appears, switch paragraphs around, personalize things that ought to be personal, see how what you've written would look with different margins, in all capital letters, or with boldface headings, add or delete names or numbers from lists, file away fleeting ideas and retrieve them whenever you want them, automatically show you a "table of contents" of all your ideas in case you've forgotten them, put a notion on "hold" while you do something else, and prod you into certain secret places that your mind has seldom, if ever before, entered.

It lets you do all this on an IBM® or an IBM-type personal computer. It's easy enough for beginners, yet powerful enough for the most accomplished pros. All this in one package for the first time.

This is command of the language.

This is Leading Edge™ Word Processing.



LEADING EDGE™

PROFESSIONAL WORD PROCESSING

**FOR THE IBM AND LEADING EDGE TYPE PERSONAL COMPUTERS, FROM \$100 (\$150 WITH MERGE PRINT).
AVAILABLE NOW AT MOST COMPUTERLANDS™ AND OTHER AUTHORIZED LEADING EDGE DEALERS.**

LEADING EDGE PRODUCTS, INC., 21 HIGHLAND CIRCLE, NEEDHAM HEIGHTS, MA 02194, 800-343-3436 (617) 449-4655

THINGS IN GENERAL:

In a nutshell, Leading Edge® is big word processing for the small computer.

It's the simplest, yet most powerful word processing program ever created for sophisticated Personal Computers like the IBM® (or the even more-powerful Leading Edge PC).

You can learn the basics of the system in a matter of minutes, master it in a matter of hours, and never 'out-grow' it in a lifetime.

If you've been using another word-processing package, either you've been working too hard, or it hasn't been working hard enough.

Thanks to this program, even the most complex functions are typically reduced to just one or two keystrokes. And thanks to an impeccably logical and easy-to-reference Operator's Manual, you can quickly flip to any function you want to perform, and immediately start performing it.

So you can hunt and peck your way into the future, or (if you're already a good typist) . . . you can fly.

THINGS THAT MAKE IT SIMPLE

A MANUAL THAT'S A HELP, NOT A HINDRANCE

An elegantly logical User's Manual written by non-technical writers, tested on beginners and experts alike, with simple, intelligent illustration, examples, and instructions, tab-indexed for instant access to any word-processing function.

SIMPLE LEARNING AIDS TAILORED TO YOUR ABILITY

Learning is easy—and actually fun—at every level, beginning with a Beginners' Guidebook and an interactive training disk that gives you on-screen instructions and holds your hand as it walks you through the basics step by step. After that, there's a "shorthand" cue card and keyboard overlay that refresh your memory at a glance. Most people start to do basic word-processing in less than one hour.

THE MOST HELPFUL "HELP" KEY YOU'LL EVER PRESS.

Gives you exactly the information you want, whenever you want it.

CLEAR, HELPFUL MENUS

Type two keys, and your screen gives you a "table of contents"—to let you "call-up" anything you've written, so you can revise it, update it, discard it, or print it.

BYPASS THE MENU

The menus are there if you want them. If you don't, fly nonstop to what you want using the menu bypass.

SIMPLE COMMANDS

Simple one- and two-keystroke commands mean you have no complicated codes to memorize.

LOGICAL DESIGN

So logical that when you know how one thing works, you know how a dozen other things work.

DESIGNED SPECIFICALLY FOR THE IBM OR LEADING EDGE PC KEYBOARD AND COMPUTER

To take advantage of all the power these PC's are capable of, with the greatest amount of simplicity.

THINGS THAT MAKE IT FAST

THE FASTEST CURSOR MOVES IN WORD PROCESSING

More moves with fewer keystrokes than any other system at any price. You can instantly move to the next character, next word, next sentence, the next line, the next page, or to the end of an entire document.

GO TO ANY PAGE INSTANTLY

Just tell Leading Edge Word Processing what page you want, and you get it.

"DO IT" KEY MAKES BIG CHANGES WITH ONE KEYSTROKE

The simplest, fastest way to insert, delete, and move big blocks of text. (This is the "execute," or "plus" key on the IBM or Leading Edge PC.)

CHANGE A FORMAT IN SECONDS

Without leaving page or letter or memo or other document you're working on, you can see how it would look with different margins, indented, or in all capital letters; or with boldface headings, etc.

BLOCK INDENT

You don't have to hit the tab key on every line to create a temporary margin. (Great for columns of figures, sub-paragraphs, outlines, etc.)

DIRECT-DIAL DOCUMENTS FROM THE DIRECTORY

Just highlight the document you want (using the cursor keys), and you'll get it, simply by hitting the execute key.

HOT PRINT

Print any portion of a document, from one line to an entire document.

DOT LEADER TAB

Useful for things like tables of contents.

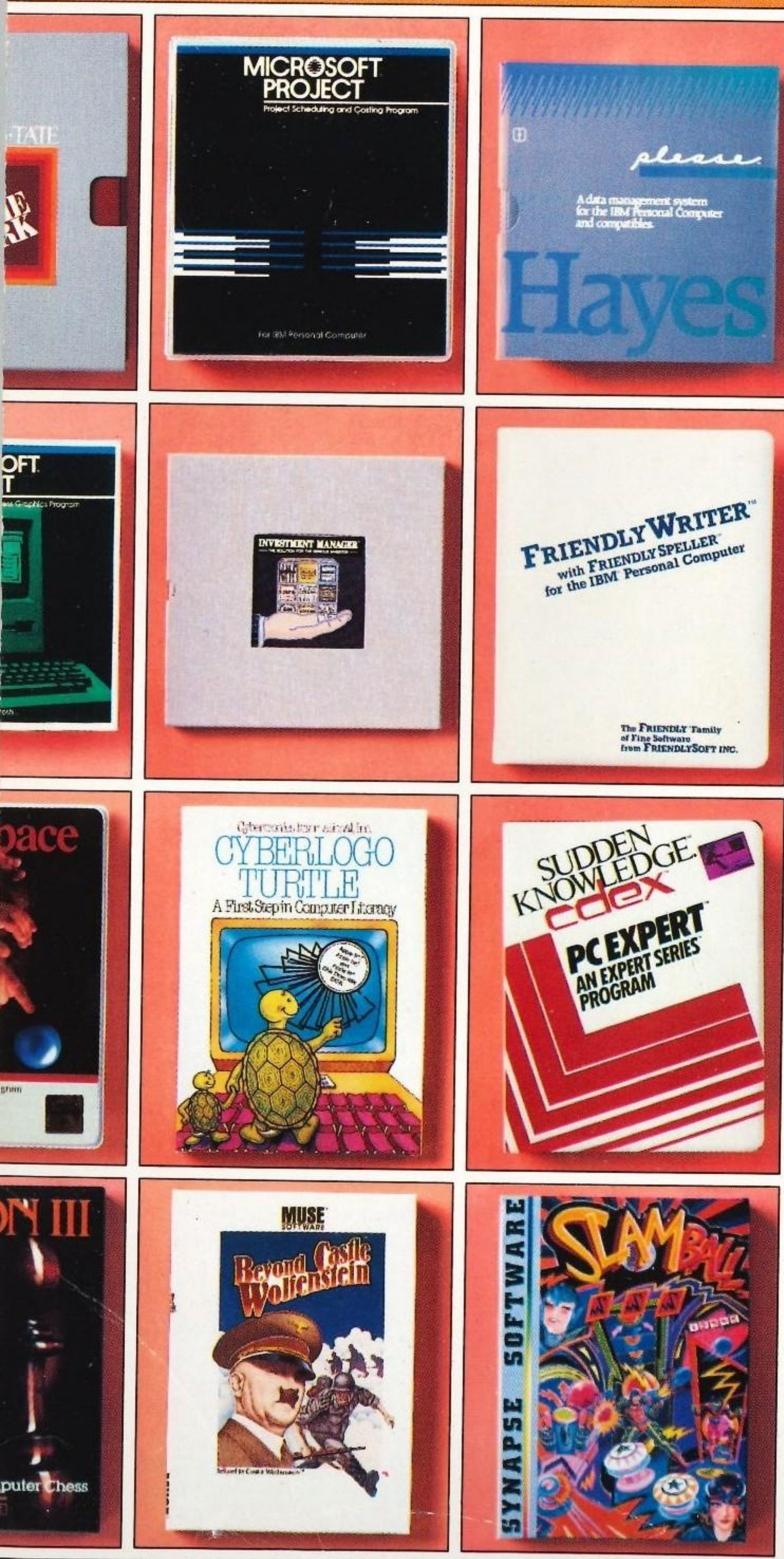
TRANPOSE KEY

Corrects the most common mistake in typing: One stroke turns "teh" into "the."

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International Business Machines Corporation.

LEADING EDGE PRODUCTS, INC., SOFTWARE SALES DIVISION, 55 PROVIDENCE HIGHWAY, NORWOOD, MA 02062, 1-800-423-0300 IN MASSACHUSETTS, (617) 769-8770

VIEWED IN DEPTH



PRODUCTIVITY

- dBASE III** • PAGE 37
- The Profit Center** • PAGE 38
- Framework** • PAGE 39
- Microsoft Project** • PAGE 40
- Please** • PAGE 41

PERFORMANCE

- Rags To Riches** • PAGE 43
- R:base Clout** • PAGE 44
- Microsoft Chart** • PAGE 45
- Investment Manager** • PAGE 46
- FriendlyWriter** • PAGE 47

LEARNING

- Dinosaurs** • PAGE 49
- Fact And Fiction Tool Kit** • PAGE 50
- Childpace** • PAGE 51
- CyberLogo Turtle** • PAGE 52
- PC Expert** • PAGE 53

LEISURE

- MousePaint** • PAGE 55
- Flight Simulator** • PAGE 56
- Sargon III** • PAGE 57
- Beyond Castle Wolfenstein** • PAGE 58
- Slamball** • PAGE 59

THINGS THAT MAKE IT EASY

ONE-KEY INSERT AND DELETE
Lets you do word processing's two most common functions the simplest possible way.

MARGIN AND TAB SETTINGS AS EASY AS ON A TYPEWRITER
No other word-processing system of any size makes it this easy. You can even adjust both left and right margins on-screen.

THE SCREEN SHOWS YOU WHAT YOU'RE GETTING
You don't have to wait until it's printed. You see margins, line breaks, underlines, page breaks, etc., as they will appear.

JUSTIFIED, OR RAGGED-RIGHT
And see it on the screen the way it'll appear when it's printed.

ANY NUMBER OF FORMATS IN A SINGLE DOCUMENT
Order different margins, tabs, line-spacing—anything—for any section of a document.

HEADERS AND FOOTERS OF ANY LENGTH
The document name, page number, or other information is printed automatically at the top or bottom of any page, or every other page, or wherever.

PRINT ANY PAGE IN THE FILE
You don't have to print a whole document. Just punch in the page number.

HARD PAGE BREAK
Lets you tell the system where you want pages to break.

HARD AND SOFT SPACES AND HYPHENS
You can tell the program which words must go together on the same line, which words must be hyphenated.

WIDOWS AND ORPHANS
The system automatically breaks pages to avoid leaving unsightly single lines or partial paragraphs at the bottom or top of a page—unless you want them there.

FRACTIONAL LINE SPACING
1½-line spacing is as easy to order on Leading Edge Word Processing as on a typewriter.

TEXT THAT'S WIDER THAN THE SCREEN
Horizontal scrolling allows you to create documents up to 200 characters wide.

THINGS THAT MAKE IT PROFESSIONAL

ONE-KEY CUT AND PASTE
Lets you move pieces of text around like matchsticks with far fewer key-strokes than other systems.

ONE-KEY CENTERING
And the line (or block of type) stays centered even when you change it.

AUTOMATIC REFORMATTING
You don't have to clean up a paragraph after you edit it. Leading Edge Word Processing does it for you.

THE BEST UNDERLINE YOU CAN BUY
As easy as a typewriter. And it shows on the screen as an underline.

BIG-SYSTEM BLOCK FUNCTIONS
Leading Edge Word Processing deletes, inserts, and performs other changes on large blocks of text through the use of forward and backward highlighting.

SCRATCH PAD
Gives you "scrap paper" in the middle of a document for working on text. When you're finished, you can insert the text, discard it, or even cut it out and paste it somewhere else.

NAME DOCUMENTS THE WAY YOU WANT
No codes needed. You can call a letter to Mom "Letter to Mom."

SPLIT SCREEN/WINDOWS
This big-system feature puts two documents on the screen at the same time so you can copy from one to another.

BOLD, SUBSCRIPTS, SUPERSSCRIPTS, STRIKETHRU, AND LETTERS DOUBLE-WIDE
You get to see them on the screen, and you don't have to go through a big rigamarole to get them.

U.S. AND FOREIGN DECIMAL TABS
Automatically line up the decimal in its proper place in a column of numbers.

THINGS THAT GIVE YOU PEACE

A REAL LIVE PERSON
In the unlikely event that your system ever "crashes," or you need help with any feature or function, there's a toll-free hot-line that connects you to an expert tele-diagnostician who can give you an instant answer. 1-800-523-HELP—in Massachusetts, 617-449-6060.

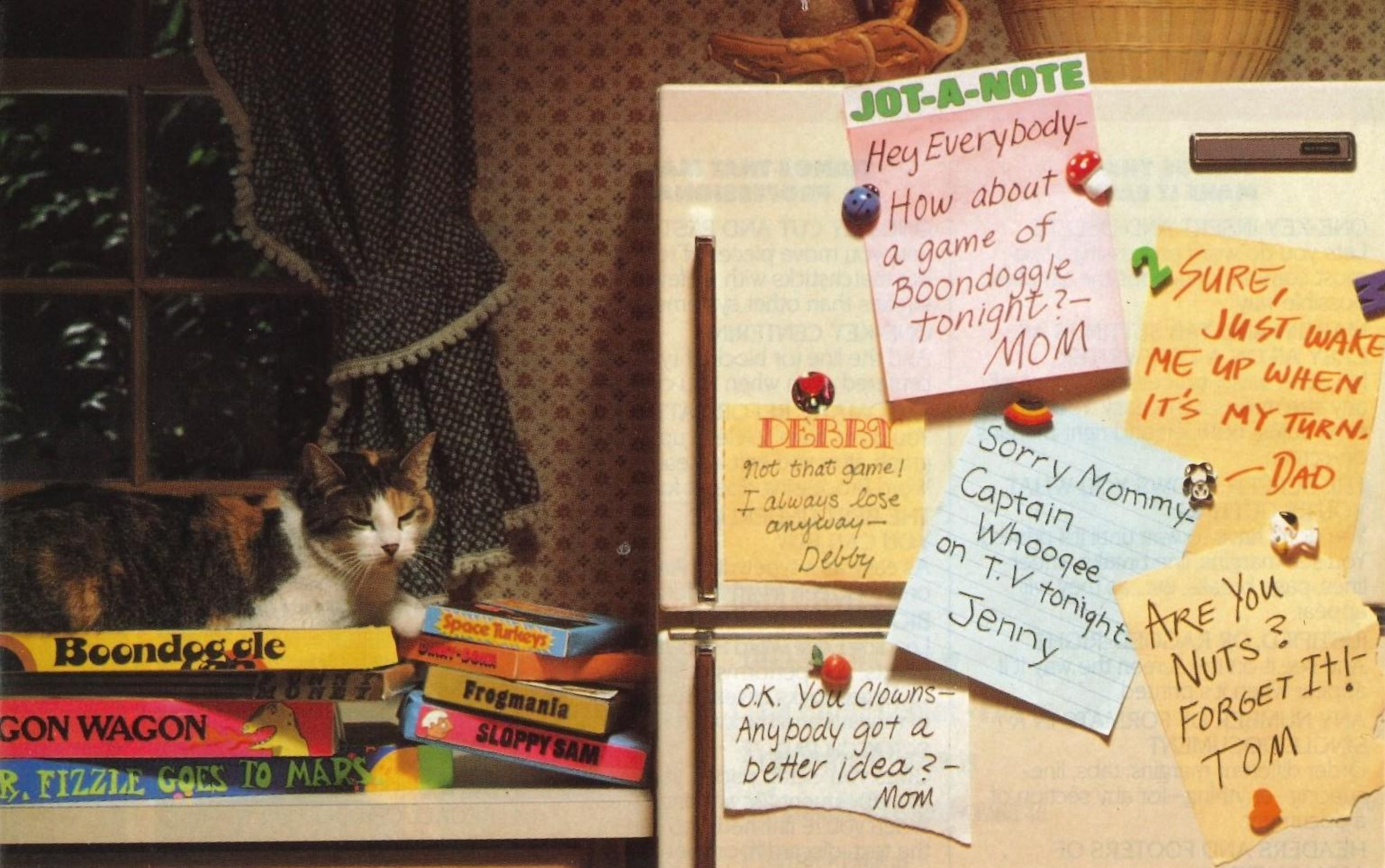
AUTOMATIC SAVE
While you are editing, or creating a document, Leading Edge Word Processing automatically makes a copy every 15 seconds. So your work is saved, even if the power fails.

AUTOMATIC DOCUMENT BACKUP
Every document is automatically copied twice onto your file disk, if you choose to do so. So if an accident happens to one document, you still have a copy. (Don't worry. Your writing's not going to get lost in some electronic blackhole.)

RECALL OF DELETED TEXT
If you delete text by accident or change your mind, you can get it back.

CUSTOMER PROTECTION PLAN
Your Leading Edge Word Processing is guaranteed forever. If you should accidentally destroy it, we'll replace it at a nominal cost. Whenever we upgrade it, we'll give you an updated program at a nominal cost.





If getting the whole family together is a real challenge, maybe you need games that really challenge the whole family.

Ever notice how a little fun with the family can be a little hard to arrange?

Well, now there's a solution—Spinnaker's Family Learning Games. A whole family of great games that make getting the family together seem like child's play. And make "family fun" really seem like fun again. What's more, they'll even help your kids develop some very important skills.

What makes our Family Learning Games so special? Well, for one thing they're

designed to challenge and excite everyone in the family, from grade schoolers to grownups. Their unique combination of chance and strategy makes them perfect for young players, yet challenging enough that everyone will want to play them again and again.

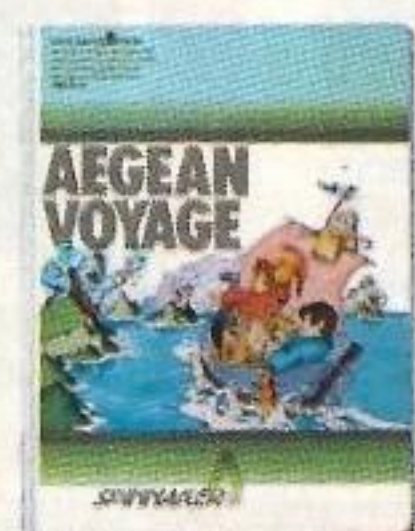
But what makes our Family Learning Games even more unique is how they help kids learn—about problem solving, strategizing, spelling, even Greek mythology. That's

quite a bit more than they'd learn from a typical board game (if you could even get them to play a typical board game).

So next time you want to get everybody together, don't get discouraged—get Spinnaker's Family Learning Games.

You'll find the biggest challenge in family fun won't be on the refrigerator. It'll be on the computer.

Spinnaker games are available for ColecoVision® and for Coleco Adam,™ Commodore 64™ and Atari® home computers.



It's New!
AEGEAN VOYAGE.™
Where do monsters lurk? And which islands have treasures to behold? Heed the oracle's words, for only his clues can lead you to riches and a safe return. **Ages 8 - Adult.**



ADVENTURE CREATOR.™
Design a challenging adventure game that everyone can play—or let the computer design one for you. It's exciting, creative—and utterly addictive! **Ages 12 - Adult.**



UP FOR GRABS.™
It's a wildly exciting crossword game where everyone has to think fast. More words will help you win—but don't get caught with leftover letters! **Ages 8 - Adult.**



Cartridges for: ColecoVision, Coleco Adam, Atari and Commodore 64.

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PERSONAL SOFTWARE / Contents



PAGE 97

NEW RELEASES 11

This month, 126 new software packages were released. We list them all according to category (Productivity, Performance, Learning and Leisure) and we give a brief description of the main features of each one.

TOP 20 35

A critical evaluation of the 20 best software packages. Each program was carefully selected by our board of editors from the 126 new software packages released this month.

TEST DRIVES 65

An in-depth tour through the most significant programs which are currently on the market. Our editors show you in words and pictures what those packages are like to use. This month's features: The PFS Family, Multipan, Music Construction Set and Bank Street Writer.

BUYER'S GUIDE 97

A complete explanation, in layman's terms, of everything you'll need to know to make the right purchase of software to fit your relational data base needs. Comparison tables give you features, prices and system requirements for over 80 products.

DEPARTMENTS

Editorial 5

Best Sellers. . . . 61

Last Word. . . . 114

Advertiser's Index. . . . 120



This month's 20 best software releases as photographed by Roberto Brosan.

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No matter what line of work you're in,
you can use **MEGAFINDER!**



MEGAFINDER IS A DATA MANAGEMENT PROGRAM THAT IS SO SIMPLE, ANYONE CAN USE IT, NO MATTER WHAT THEY DO FOR A LIVING!

Unlike most other computer programs, Megafinder has simple, easy-to-remember commands. It also has instant on-line help to give your customers answers when they need them!
It's simple.

MEGAFINDER MAY BE THE MOST POWERFUL AND VERSATILE DATA MANAGEMENT PROGRAM AVAILABLE FOR A PERSONAL COMPUTER.

Not only is Megafinder a simple system to use, but it has many other plus-factors that will really set a person free! Things like:

- Advanced sorting and retrieving capabilities
- Unmatched speed
- Simple, yet sophisticated form design
- Efficient report generation
- A virtual library of ready-made forms you can use
- Instant on-line help
- Complete ease of use

MEGAFINDER IS ALSO FULL OF ITS OWN IDEAS!

Megafinder is the only data management program that gives the user its own ideas for using it!

Its library of ready-made forms and reports for example, solve business, home and personal finance needs as well as other everyday transactions.
Plus, an individual can design his own custom forms for his own specific needs. Just think, now a person can:

- Store mailing lists
- Prepare invoices
- Record financial data
- Manage task files
- Keep inventory records
- Compile sales records

MEGAFINDER WORKS ON THE MOST POPULAR COMPUTERS!

Megafinder is compatible with Apple II+, IIe and soon for Apple's new Macintosh! It will also work wonderfully well with the IBM PC.

Remember.
Megafinder is a TOTAL organizing tool. If you keep any kind of file at all...you'll NEED Megafinder!

**The more you learn about software,
The more you'll choose**

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WE MAKE COMPUTERS WORK HARDER.

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Contact us for further information and to find out the nearest Megahaus Dealer

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EDITORIAL

Which way do you go in software? The answer to this question used to be easy; there weren't that many choices.

Now, you must choose a "direction" in software, rather than simply selecting a particular program. This direction is important, since it could be long-term and, more importantly, could end up being a significant investment in hours and in dollars. How much time and money do you want to spend and what do you expect to get out of it?

Some of the more powerful programs require more of an investment in time to learn and, as you might expect, cost more, but give you a long-term payback.

As many of you realize, you don't have to learn programming to use a personal computer, just as you don't have to be a mechanic to drive a car. The less you want to learn about the technical aspects of computing, the more you might be attracted to the easier-entry type of programs. These are software packages that require relatively little time and effort to learn and provide you with immediate results. That may be as far as you care to go. The PFS Series software (see Test Drive, page 66) is an example of this kind of program.

Programs in such a series may not do everything you may ever want to do but they might do what you need to do now, plus offer growth potential in the form of additional programs available in that particular family. The logic of this approach lies in only having to learn one set of commands, or one "language," to use the programs, while your investment can be spread over a period of time.

The other type of programs, such as WordStar, Lotus 1-2-3 and dBASE III, are considerably more powerful and come loaded with plenty of reserve horsepower for your future needs, once you have mastered what is usually an extensive list of particular functions and commands. The learning curve is more significant, but the payback may also be greater, depending on how far you want to go and what you want to accomplish.

Should you buy an integrated or a stand-alone package? Again, you must determine your needs; it depends on what you want to do. The software "family" approach could provide all you need, even over the long haul.

One other consideration is price. The easier-entry programs are the least expensive individually; the powerful packages are more expensive; and the integrated packages usually are even more expensive.

Programs are getting far more sophisticated as concurrent technological advances allow you to do more with your computer. The level of learning is changing. Different people want to go to different computing levels and the software market must respond to this demand by providing differing approaches.

It takes a much wiser consumer these days to sort this all out before buying. We trust that what you'll find on these pages will be of help.

Charles L. Martin

The new IBM DisplayWrite Series is here. Spread the word.



In 1980, IBM introduced the Displaywriter System. Today, it's become the best-selling stand-alone text processor in the world. One reason for this success is the Displaywriter's function-rich software.

If you're looking for software like that, but working on an IBM personal computer, you don't have to look any further. Because the IBM DisplayWrite Series is here.

And it will put many of the features and capabilities of a dedicated word processor to work for you when you're writing.

It runs in the family.

You'll find two word processing programs in this series: There's DisplayWrite 1, for IBM personal computers — including PCjr. And DisplayWrite 2, with added functions for your PC, PC/XT or Portable PC.

You'll also find DisplayWrite Legal, a dictionary of about 16,000 words that a lawyer might need to check.

And you'll find DisplayComm, which lets your IBM PC send and receive text to and from other IBM PCs. If you're writing at the office, this program could also let you send text to an IBM Displaywriter down the hall. (From there, it could be sent on to an IBM host computer for distribution.)

Some words on high function.

The DisplayWrite word processing programs give you the time-saving features you'd expect from IBM. Justified margins, centered lines and pagination, for example. You'll even have prompts and messages to help guide you along.

But there are also some features in DisplayWrite 2 you might not expect. Like easy column formatting, four-function math capability *plus* a spelling checker based on a dictionary of about 100,000 words.

Yet the biggest surprise of all may be the price.* DisplayWrite 1,** \$95. DisplayWrite 2, \$299. DisplayWrite Legal, \$165. DisplayComm, \$375.

Where you can find all four.

Get more information about the IBM DisplayWrite Series at your authorized IBM Personal Computer dealer or IBM Product Center. To find one near you, call 800-447-4700. In Alaska or Hawaii, 800-447-0890.

Stop there first and get the last word.

**IBM®**

Personal Computer Software

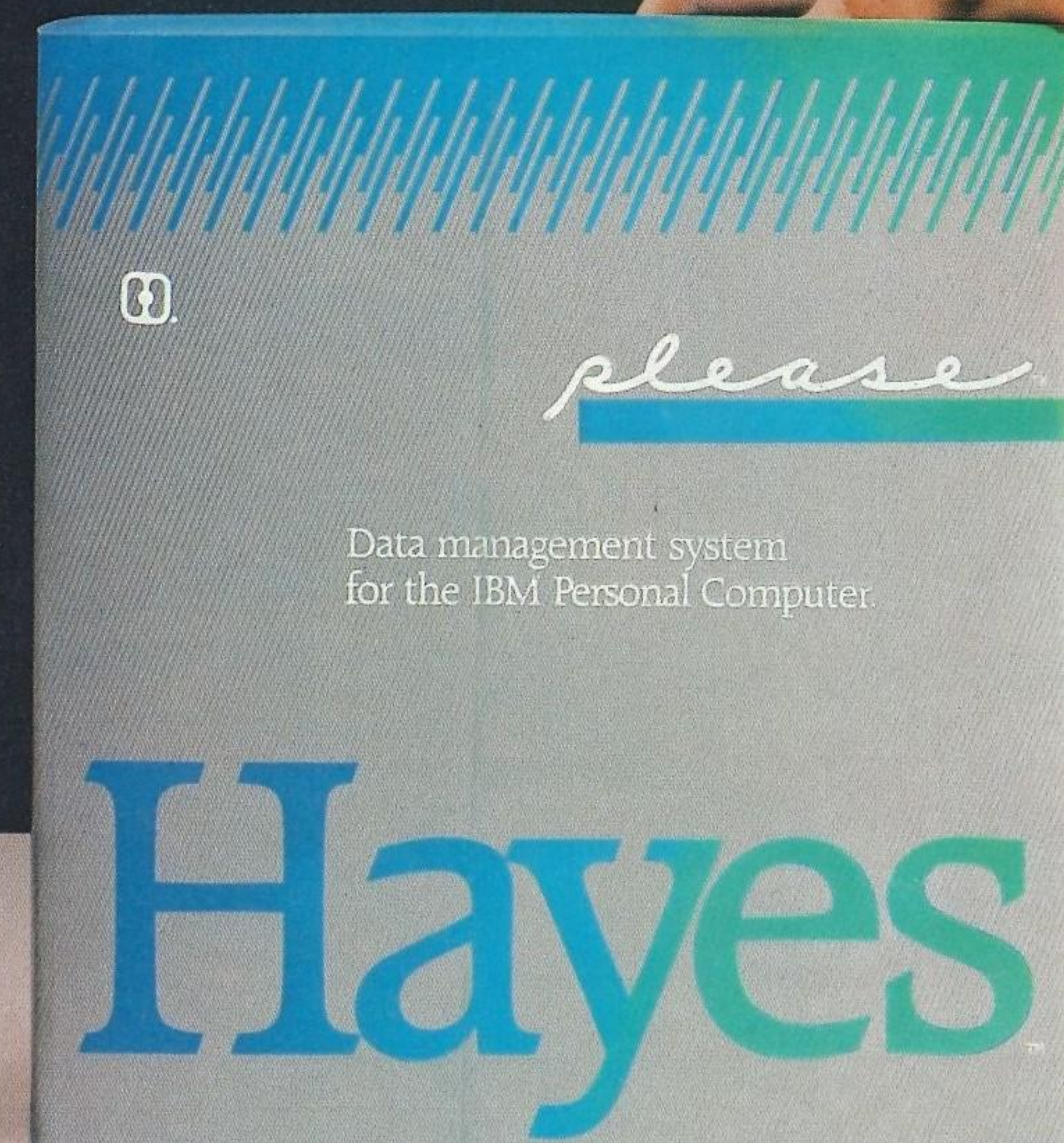
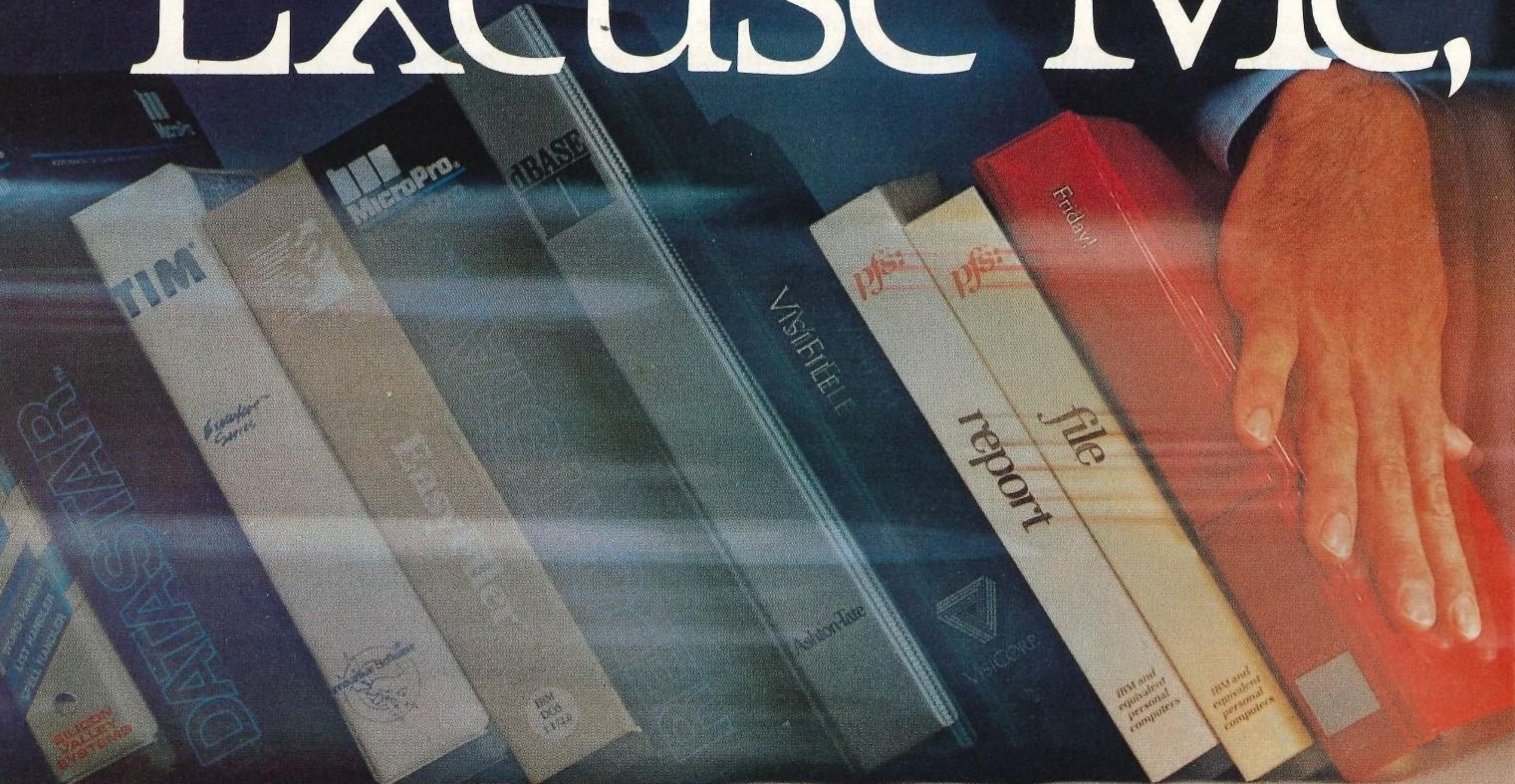
Little Tramp character licensed by Bubbles Inc., s.a.

*Prices apply at IBM Product Centers and may vary at other stores.

**Available in July, 1984.

"Excuse Me,

Please."



Make Way For Hayes' Please.

An advanced, easy-to-use data management system for the IBM® PC and compatibles.

Want to get your paperwork out of a clumsy file cabinet and onto your PC's screen, where you can manage it better? Frustrated with data base software that's either too limited or too difficult to use? Hayes offers you a simple word of kindness.

Please™. A powerful, yet easy-to-use, system for organizing and managing your information. *Please* is flexible enough to store any data you enter, and it'll return data to you in exactly the form you need. *Please* does more.

It does it all faster. And it's sure to please!

"The menu, Please?"

Menus list all your options and tell you exactly which keys to press for every *Please* feature.

That's to be expected. As the telecomputing leader, Hayes built its reputation on quality design, reliability

and customer support. Now these same standards have been applied to a new data management system that is going to instantly change the way you do business!

Say you're looking for an efficient way to maintain sales data. *Please* leads you every step of the way in creating a sales database that might include names, addresses, dates and figures. These categories are called "fields" in database lingo, and they're the very heart of your database structure.

Want last month's total in a particular region? Press a few keys and it's yours! A few more keystrokes and you'll know who's moving product, and what's your biggest seller.

Please will supply you with labels for a mailing to selected customers. It can send customer information to your word processor for a promotional letter. And it can receive data from

your spreadsheet program. *Please* will even look up a name and company for you, your Hayes Smartmodem* will dial the phone number, and you're ready to talk!

Taking this same sales database, you might also want to define special

"Make it snappy, Please!"

Need a report fast? You and *Please* can put together a Quick List in a matter of seconds.

fields for a custom Output Plan. With a defined field for "COMMISSIONS DUE," *Please* can automatically compute each salesman's commissions, and print them out in a report of your own design. All this and more, just for saying "Please."

And if you ever change your mind and want to change the structure of your database, please feel free. Step-by-step instructions show you how.

You have the same flexibility with any database you and *Please* design. You can store up to 16 million records and 200 custom Output Plans for each database! More than you're likely ever to require. But isn't it nice

"Put it here, Please."

Design a special screen format to position data in a particular place.

knowing all that storage power is there?

Just in case you ever need it?

Now you might think that a data management system that does all this must be difficult to use. Right? Rest assured. *Please* works hard so you don't have to. An easy-to-follow sample disk shows you everything

you need to know to create your first database. Three *Please* menus show you which keys to press to access every feature.

And whenever you need it, *Please* provides on-screen HELP messages, tailored to a specific task. So you needn't waste time reading through a list of unrelated instructions on your screen. Or stop what you're doing to consult a manual. In no time at all, and with no assistance at all, you'll be a *Please* database pro!

"Merge these, Please!"

Combine data from one database into another, without changing your original.

Everything about *Please* is designed to save you time and effort. So what could make data management even easier? *Please Application Templates*, that's what!

To help you get up-and-running immediately, we've developed a series of practical, pre-designed templates. You'll appreciate their well-thought-out structure, and "fill-in-the-blank" ease. Choose several! For business and personal use.

Including *Mailing List*, for storing names and addresses and producing mailing lists. *Contacts*, for man-

aging facts and figures about your sales contacts. *Applicants*, for following applicants throughout the interviewing process. *Appointments*, for maintaining your calendar and tracking all of your business expenses. *Household Records*, a complete home management system. And more! Your dealer has details!

Buy *Please* now! Get a FREE *Mailing List* template from your dealer.

Second FREE template of your choice, direct from Hayes!

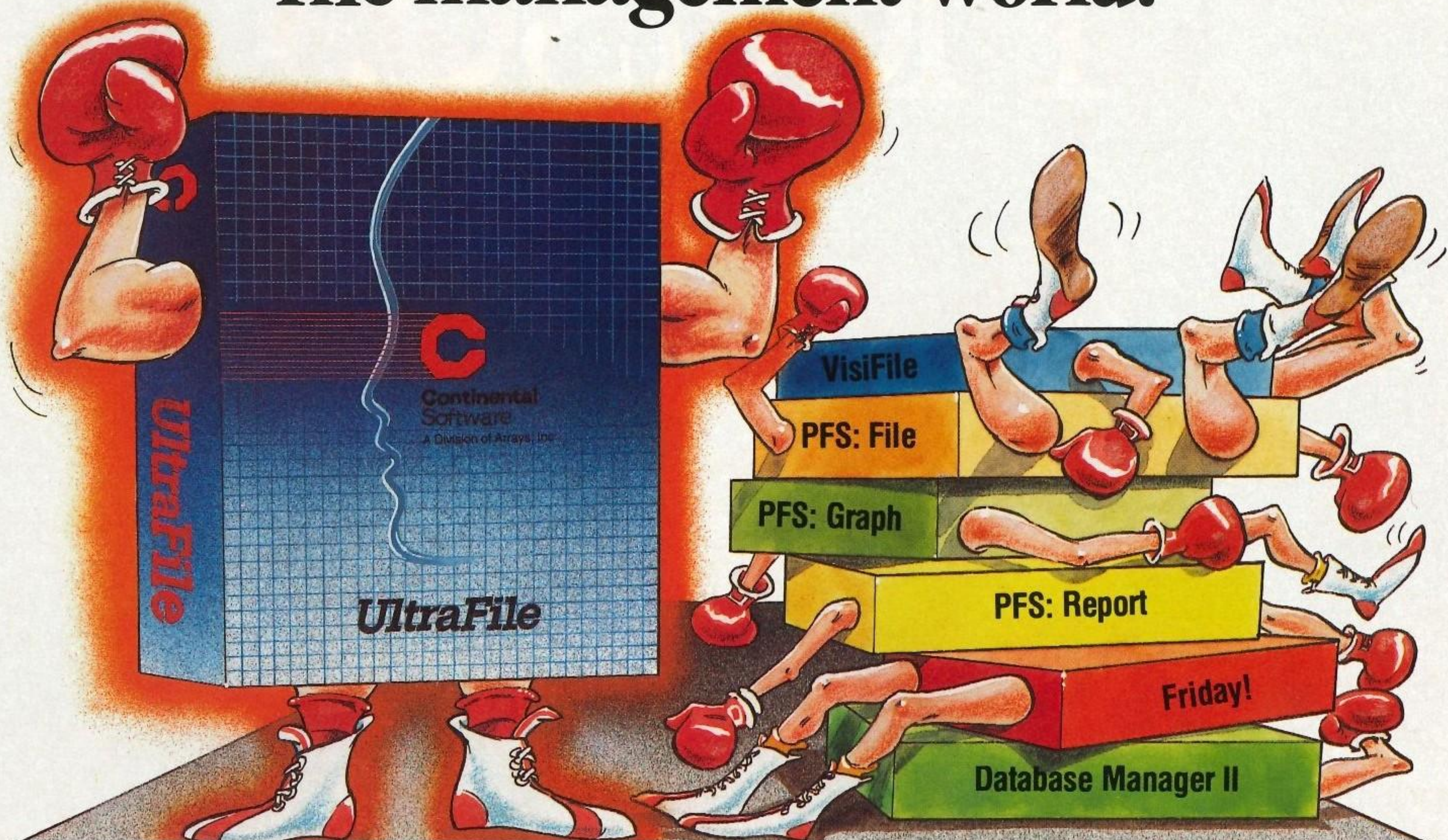
Help yourself. Please! And take advantage of these two valuable offers. See your dealer right away!



Hayes

Hayes Microcomputer Products, Inc.,
5923 Peachtree Industrial Blvd.,
Norcross, Georgia 30092. 404/441-1617.

UltraFile™ -vs- The rest of the database/ file management world.



	PRICE	GRAPHING CAPABILITIES	CUSTOM REPORTS	HELP SCREEN	BROWSE FEATURE	AUTOMATIC DATA FORMATTING	BUILT-IN WHAT IF FUNCTION	ON-SCREEN CALCULATIONS	DATA VERIFICATION	USER DEFINED SCREENS	MULTI-KEY WORD SEARCH
ULTRAFILE	\$195.	X	X	X	X	X	X	X	X	X	X
Friday!	\$295.		X	X		X		X	X	X	
PFS: File, Graph, Rep.	\$447.	X	X							X	X
Database Manager II	\$295.		X		X			X	X		X
VisiFile	\$300.		X							X	X

When you compare features and price, there's no comparison.

If the recent database/file management explosion has left you in a state of confusion, you're not alone. We'd like to clear up some of that confusion.

We've taken the five most popular programs on the market and run a comparison so you can see for yourself exactly where they stand. And what you're getting for your money.

As you can see from the chart, dollar for dollar, feature for feature, UltraFile comes out on top. Here's why:

To begin with, UltraFile has filing, reporting and graphing capabilities all in one package. So, when you buy UltraFile, you automatically get everything you need for creating terrific graphs, custom reports, and managing and storing your information. And you get it all for \$195.

Secondly, UltraFile has a help screen. UltraFile leads you step by step through the

program. If you need additional help or want to clarify a point, you'll be able to call up the help screen with the touch of a single key. This feature makes UltraFile incredibly easy to use.

Thirdly, UltraFile has automatic data formatting. So if you want a certain word in your text to appear in all caps, you only have to enter it that way the first time. UltraFile automatically capitalizes the word each time it appears. That means fewer errors and more consistency in your text.

UltraFile also does on-screen calculations, has a handy "browse" feature for quickly scanning your data, and has a built-in "what if?" function so you can make projections. Plus, UltraFile talks to the most popular word-processing and spreadsheet programs (1-2-3, WordStar, VisiCalc and others), which gives you greater versatility.

When you stack it up against the rest, UltraFile has the most features for the best price. It just wouldn't make sense to consider anything else.

Available for: IBM PC/XT
Price: \$195 complete.
File, Report and Graph.

For the name and location of the UltraFile dealer nearest you, or your free 64 page booklet, "Tips For Buying Software," please write or call: Continental Software, 11223 S. Hindry Avenue, Dept. PS, Los Angeles, CA 90045, 213/410-3977.



PERSONAL
SOFTWARE

AUGUST • 1984

NEW RELEASES

This is the complete listing of the 126 new programs released this month. The Top 20, as selected by *Personal Software's* editors, are highlighted throughout the listings. A brief description of each program and the name and address of the company that makes it are also included.

UltraFile is a registered trademark of Continental Software. Friday! is a reg. t.m. of Ashton-Tate. PFS File, Graph, Report are reg. t.m. of Software Publishing Co. Database Manager II is a reg. t.m. of Alpha Software Corp. VisiFile and VisiCalc are reg. t.m. of VisiCorp. 1-2-3 is a reg. t.m. of Lotus Development Co. WordStar is a reg. t.m. of MicroPro Int'l. IBM PC/XT are reg. t.m. of IBM Corp.

It's never too early to begin.

If you have children ages four to eight, give them a head start on the computer age with programs from ERIC Software Publishing.

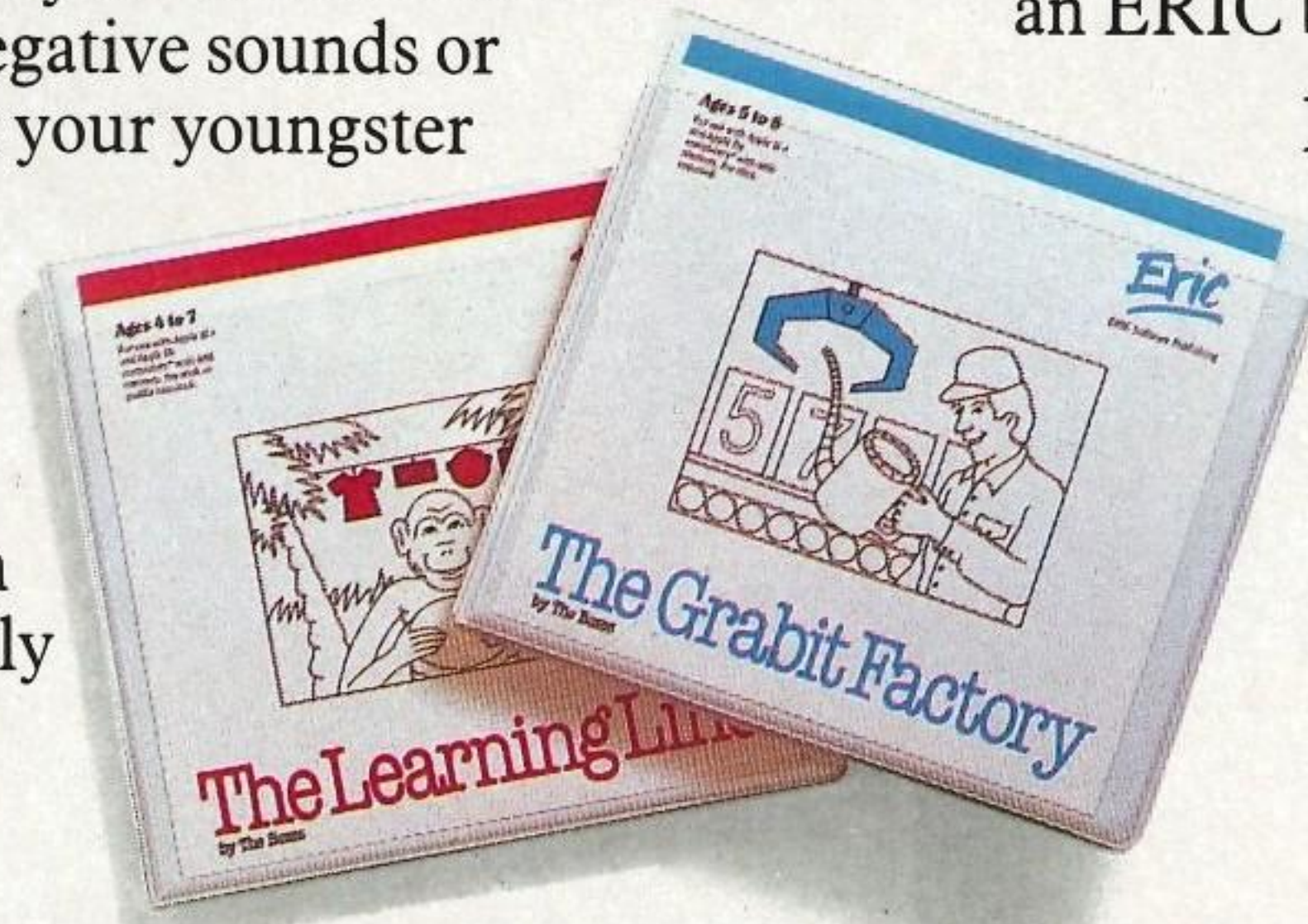
ERIC makes it fun to learn. In "The Learning Line," a curious monkey helps your child learn to recognize letters, numbers and objects, and to associate words with pictures. Your youngster operates a crane in "The Grabit Factory" to pick up number blocks that complete a simple addition or subtraction problem. Any child will have a delightful time learning to count in "The Sweet Shoppe." These programs are just the beginning of a complete library of fun, challenging games from ERIC Software Publishing.



ERIC makes it easy to learn. Once the program is loaded, your child only needs to use a joy stick or paddle and one key to operate any ERIC game. After just a few minutes of instruction, your child can take total charge of the computer.

ERIC makes learning positive. ERIC programs reward success, but if your child makes an error, there are no negative sounds or images to discourage your youngster from trying again.

ERIC is unconditionally guaranteed. Even a diskette clogged with peanut butter and jelly will be cheerfully replaced.



In our fast-paced world of technological change, it's important that a child's learning processes begin at an early age. With programs from ERIC Software Publishing, your youngsters can start now. It's never too early to begin.

Visit your local computer store for a demonstration. For the name of a store near you or for an ERIC brochure, call or write us.

ERIC programs are available for Apple II+, Apple IIe, Franklin, and Commodore 64 computers.*

*Apple II+ and Apple IIe, Franklin, and Commodore 64 are registered trademarks of Apple Computer, Inc., Franklin Computer and Commodore Computer respectively.

Eric

ERIC Software Publishing
1713 Tulare
Fresno, CA 93721
(209) 237-0989

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NEW RELEASES/INDEX

Programs are listed alphabetically by the personal computer on which they run and by software category. Programs that run on more than one personal computer are listed more than once.

Apple II/III Series

- AEC Spelling
- Apple SourceLink
- Baseball Team Statistician
- Beyond Castle Wolfenstein
- Black Belt
- The Business Letter Library
- The Chemistry Tutor
- Childpace
- ClassMate
- Color Learning
- CyberLogo Turtle
- Dinosaurs
- Early Childhood Software
- Elementary Algebra
- Fact or Fiction Tool Kit
- Jane
- Lordlings of Yore
- MousePaint
- The Oddsmaker
- Plato Math Courseware
- Reasoning Skill Programs
- Simply Perfect
- Speed Reading...The Computer Course
- Star Search
- Talking TermExec
- Word Alert Series

- Writing with a Micro: Before Word Processing and Beyond

Apple 32-Bit System Family

- Clickart
- MCPIC!
- MegaMerge
- Microsoft Chart
- Open Access
- Sargon III
- Utilities for the Apple Macintosh

IBM (PC-DOS)

- Abtab
- AEC Spelling
- Algebra Plus
- APS Series
- Aris
- Aura
- The Business Letter Library
- Childpace
- ClassMate
- Commtrader
- Computer Concepts
- CopyLink-PC
- Cribbage
- C Utilities Package
- dBASE III
- Dinosaurs
- EM100
- FilePro 16
- Flight Simulator
- Foundation
- Framework
- FriendlyWriter
- General Ledger System
- Gramarcy—The Word Game
- High School Skills Math Instructional Series

- ILink
- IMS-Calcul
- Instant Tutor!
- Investment Manager
- Jane
- The Label Maker
- Lessonware
- Management Control
- Math School
- Microsoft Chart
- Microsoft Project
- Mighty Mail
- MyCalc
- My Word!
- Open Access
- Optionvue Plus
- PC-Calculator
- PC-Dial/Log
- PC Expert
- PC/Focus
- PC-Intercomm
- PC-Showoff
- Phonchek
- Phrase Craze
- Please
- The Profit Center
- Rags to Riches
- R:base Clout
- Report Manager
- Rollo and the Brush Bros.
- R Word
- Sapana:Cardfile
- Set-FX+
- Software 16 Accounting
- Speed Reading...The Computer Course
- The Spelling Teacher
- Typing Instructor
- Wall Street Window
- Women's Ware

MS-DOS

- Aura
- dBASE III
- FilePro 16
- FriendlyWriter
- Gramarcy—The Word Game
- Investment Manager

- Open Access
- PC/Focus
- The Profit Center
- R:base Clout
- R Word
- Software 16 Accounting

Radio Shack TRS-80

- AEC Spelling
- Assembler
- Briefcase Programs
- Childpace
- Disk+
- File Manager
- Journalist
- List/Key
- Middle Kingdom
- Precedent Legal Accounting System
- Star Trader

Acorn

- Dinosaurs

Atari

- AEC Spelling
- Assembly Language Tutor
- Atari Proofreader
- Atari Translator
- Childpace
- Decisions...Decisions
- Dimension X
- Peripheral Vision
- Sprout!
- Survival
- War of the Worlds

Commodore

- Activision Software
- AEC Spelling
- An Introduction to the Commodore 64

- The Commodore 64 Music Master
- Dinosaurs
- Doodle
- Horses OTB
- Jane
- Politburo 64
- Popeye
- Slamball
- SpellPack
- Sprout!
- Totl.MoneyMinder
- Video-Trac

DEC Rainbow

- Import
- Investment Manager
- Open Access

Epson PX-8

- MicroPro Portable Software

NEC PC-8201A

- Assembler
- File Manager
- Journalist
- Briefcase Programs

TI-99/4A

- Easy Programming with the TI-99/4A
- Magic Games

CP/M

- Able One Mailing List
- APS Series
- Author, Author
- General Ledger System
- MyCalc
- Nevada Pascal
- Program Map

Unix

- R:base Clout

KEY ● Productivity, p. 15 ● Learning, p. 22
● Performance, p. 18 ● Leisure, p. 25

Parental guidance suggested.



Take an active role in your child's development.

Parenting. The most important and rewarding endeavor you'll ever undertake. Gaze into your child's eyes. They're capturing all the wonders of the world around him, and looking to you for guidance.

Now you can gain a unique insight into your child's world with Childpace™ — an amazing new Child Development Program for ages 3 to 60 months.

Share the precious firsts.

When will your baby dazzle you with his first spontaneous smile? Stand alone? Take that first wobbly step?

The first five years are filled with continual growth and change. And questions. So even if your child's a toddler, you're still looking for answers. When will he start dressing himself? When should those random scribbles turn into distinctive shapes?

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Childpace lets you evaluate your child's dexterity, language and social

skills in the privacy of your own home. You enter information into Childpace, then he attempts tasks that are appropriate for his age group.

Childpace assesses his skill level based on extensive research, not the biased opinions of friends or relatives. Childpace uses your child's chronological (actual) age.

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As your child grows, the tasks change to match his newly acquired skills. So Childpace is just as valuable for a 48-month old child as for an infant. Childpace can even evaluate up to 16 different children, and keep permanent records on each of them. Snapshots record your child's physical growth, but Childpace documents his or her actual development.

Track your child's progress, and help him develop specific skills. Childpace also contains warning signals to alert you to potential developmental problems at an early age, before they hold your child back. An ounce of prevention pays off.

Childpace. A fascinating glimpse into the world of child development. And more importantly, into your child's world.

Look for Childpace at your local computer hardware or software store. If unable to find it, send \$39.95 to Computerose, Inc. Please allow two weeks for processing. 30 day money back guarantee.



\$39.95 suggested retail price

Childpace is available for the Commodore 64®, IBM PC®, IBM PC Jr.®, Atari 800®, Apple II®, and Radio Shack Color Computer®.*

*Each is a registered trademark of the respective manufacturer.



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NEW RELEASES/PRODUCTIVITY

PRODUCTIVITY

ABLE ONE MAILING LIST *Runs on CP/M-based systems. Able Data Software, Inc., 2nd Floor, 1260 Hornby St., Vancouver, B.C. V6Z 1W2, Canada.* This program lets you print mailing labels in five different formats with additional information fields in each record for date, telephone number and amounts. \$19.95 (direct order)

ABTAB *Runs on the IBM Personal Computer. Anderson Bell, P.O. Box 191, Canon City, CO 81212; (303) 275-1661.* A tabulation package, ABtab is a management tool designed to tabulate, summarize and present collections of data in an understandable format. \$395 (retail or direct order)

APS SERIES *Runs on PC-DOS, CP/M-86, and CP/M-based systems. Automated Professional Systems, Inc., 17 E. 45th St., New York, NY 10017; (212) 986-5985.* The APS series includes APSGraph, a business graphics presentation system; APSTran, a file transfer program; APSStat, a statistical analysis system; APSFore, a business forecasting program; and APSTab, a data cross-tabulation system. \$95 to \$895 each (retail or direct order)

ARIS *Runs on IBM Personal Computer, XT. Excel Systems Corp., 655 Redwood Hwy., Suite 311, Mill Valley, CA 94941; (415) 381-4410.* ARIS, which stands for Action Resource Information System, is an integrated package comprising data base, word processor, telephone dialer, spreadsheet link, and operating system manager. \$500 (retail)

ASSEMBLER *Runs on NEC PC-8201A and TRS-80 Model 100. American Micro Products, Inc., 705 N. Bowser, Richardson, TX 75081; (214) 238-1815.* This package assembles 8085 assembly language and produces machine code for the computer. \$99.95 (direct order)

AURA *Runs on IBM Personal Computer and MS-DOS-based systems (256k, two drives or hard disk). Sof-*

trend, Inc., 2 Manor Pkwy., Salem, NH 03079; (603) 898-1777. Aura is an integrated package that employs four modules to include data base management, electronic spreadsheets, word processing, and business graphics functions. Aura also has an applications developer that allows you to tailor and upgrade program menus or sequences of operations. \$495 (retail)

THE BUSINESS LETTER LIBRARY *Runs on Apple II series, IBM Personal Computer, XT and PCjr. Delta Point Corp., 711 W. 17th St., B-10, Costa Mesa, CA 92627; (714) 642-1827.* The Business Letter Library is a collection of hundreds of model business letters for use with a word processing program (ASCII files). It features a variety of business form letters, including letters for sales, acknowledgements, memos, complaint letters, thank you notes, credit or collection letters and others. \$99.95 (retail)

COPYLINK-PC *Runs on IBM Personal Computer. U.S. Digital Corp., 5699-D S.E. International Way, Milwaukie, OR 97222; (503) 654-0668.* Copylink-PC is a communications program designed to enable high-speed data transfers between the IBM Personal Computer and other CP/M and MS-DOS computers. \$99.95 (retail or direct order)

DBASE III *Runs on IBM Personal Computer or XT (256k, two drives) and all compatibles. Ashton-Tate, 10150 W. Jefferson Blvd., Culver City, CA 90230; (213) 204-5570.* A relational data base management program for 16-bit and larger computers, dBASE III is a follow-up to the popular dBASE II data base package. The dBASE III program is designed to maintain the features of dBASE II while adding greater data base capabilities, storage, and speed. A command assistant mode called dBASE Assistant has also been added for the first-time user. \$695 (retail)

▲ Review, page 37

EM100 *Runs on IBM Personal Computer, XT, and Portable. Diversified Computer Systems, P.O. Box 7575, Boulder, CO 80306; (303)*

443-6255. A terminal emulation package, EM100 lets you use your IBM Personal Computer to communicate with DEC computers or other host computers as a VT100 terminal. \$225 (direct order)

FILE MANAGER *Runs on NEC PC-8201A and TRS-80 Model 100. American Micro Products, Inc., 705 N. Bowser, Richardson, TX 75081; (214) 238-1815.* File Manager lets you set up a data file and then organize, use and retrieve information. \$99.95 (direct order)

FILEPRO 16 *Runs on IBM Personal Computer, XT; MS-DOS-based systems (256k and hard disk). The Small Computer Company, Inc., 230 W. 41st St., Suite 1200, New York, NY 10036; (212) 398-9290.* A data base, Filepro 16 has relational capabilities and features large data capacity with the number of files limited only by disk space. \$495 (retail or direct order)

FOUNDATION *Runs on IBM Personal Computer and PCjr. Pyramid Data, Inc., P.O. Box 10116, Santa Ana, CA 92711; (800) 521-2233.* Foundation is the first in a series of applications designed to run under the company's NumberCruncher series of application executors. Foundation features relational data base management, and basic letter-writing and mail merge capabilities. \$89.95 (retail)

FRAMEWORK *Runs on IBM Personal Computer. Ashton-Tate, 10150 W. Jefferson Blvd., Culver City, CA 90230; (213) 204-5570.* Framework is an integrated package consisting of word processing, spreadsheet, business graphics, data management, forms processing and an outline generator. The program also offers linking capability with dBASE II, Lotus 1-2-3, and other ASCII files. \$695 (retail)

▲ Review, page 39

GENERAL LEDGER SYSTEM *Runs on the IBM Personal Computer and most CP/M-80-based systems. Eagle Enterprises, 2375 Bush St., San Francisco, CA 94115; (415) 346-1249.* Designed for business users with little accounting experience, this

NEW RELEASES/PRODUCTIVITY

program determines debits and credits for transactions and has a fixed asset management system to compute depreciation. \$385 (retail or direct order)

JOURNALIST Runs on NEC PC-8201A and TRS-80 Model 100. American Micro Products, Inc. 705 N. Bowser, Richardson, TX 75081; (214) 238-1815. Journalist is designed to format a text file and output it to a printer or another RAM file and features Wordstar compatibility. \$99.95 (direct order)

THE LABEL MAKER Runs on IBM Personal Computer. TJ Software, Inc., P.O. Box 2044, Arlington Heights, IL 60006; (312) 364-1065. The Label Maker lets you print labels and tags automatically from information in master files or on demand from data entered from the keyboard. The program's graphic print routines also allow bar codes and machine readable characters to be generated. \$395 (direct order)

ILINK Runs on IBM Personal Computer, XT. Info Center Software, 171 Main St., New Paltz, NY 12561; (914) 255-8925. ILink is a dictionary-driven software transfer program which allows you to download, upload, or crossload data files from an IBM Personal Computer data base and spreadsheet to IBM mainframes. \$12,500 (direct order)

IMS-CALC Runs on IBM Personal Computer, XT. Genie Systems, Inc., 49 S. Baldwin Ave., Suite D, Sierra Madre, CA 91024; (818) 355-3303. IMS-Calc is designed to let you create personal applications without programming through the workings of the Supercalc 3, an integrated electronic spreadsheet program. \$250 (retail or direct order)

LIST/KEY Runs on TRS-80 Models III, 4, 4P; IBM Personal Computer. The Soft Place, Box 7370, 1439 E. Garfield Rd., Glendale, CA 91205; (818) 243-5111. List/Key is a data base management system that features

over 100 help messages to guide you through operation of the program. \$250 (retail or direct order)

MICROPRO PORTABLE SOFTWARE Runs on Epson PX-8. MicroPro International Corp., 33 San Pablo Ave., San Rafael, CA 94903; (415) 499-1200. A new line of "diskless" software, the three ROM chip products include Portable WordStar, an adaption of the WordStar word processing program; Portable Calc, a spreadsheet; and Portable Scheduler, an appointment manager. \$195-495 each (retail or direct order)

MICROSOFT PROJECT Runs on IBM Personal Computer. Microsoft Corp., 10700 Northup Way, Bellevue, WA 98004; (206) 828-8080. Microsoft Project is designed to let the general business manager plan schedules, assign resources, and develop cost budgets for large or small projects. Project also provides features for schedules and overtime. \$250 (retail)

▲ Review, page 40

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VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

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VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information on it. If desired, totals may be posted to the VERSALEDGER II™ system.

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VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

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MIGHTY MAIL Runs on IBM Personal Computer. New Era Technologies, Inc., 2025 I. St., N.W., Suite 924, Washington, D.C.; (800) 368-5787. A series of communication programs, Mighty Mail is designed to automate interactions with popular electronic mail and information systems. Programs will be available for ITT Dialcom, MCI Mail, The Source, Easylink, NewsNet, Dow Jones, and Dialog services. \$349 (retail)

OPEN ACCESS Runs on Columbia, Compaq, DEC Rainbow, HP 150, IBM Personal Computer and XT, Apple Macintosh, NCR, TRS-80 Model 2000, Corona, TI Professional, Toshiba T-300, and Wang PC.(all 192k) Software Products International, 10240 Sorrento Valley Rd., San Diego, CA 92121; (619) 450-1526. Built around a relational data base management system, Open Access is an integrated business management package that includes information management, graphics, spreadsheet, word processing, communications, and time management modules that can work together or as stand-alone products. \$595 (retail)

OZ: MANAGEMENT CONTROL Runs on IBM Personal Computer. Fox & Geller, Inc., 604 Market St., Elmwood Park NJ 07407; (201) 794-8883. Designed to give business managers better financial control of their organizations, Oz integrates data analysis, graphics and reports to help managers track revenues and expenses. \$495 (retail)

Pc/Focus Runs on IBM Personal Computer and XT, TI or Wang Professional Computer with a 5Mbyte hard disk. Information Builders, Inc., 1250 Broadway, New York, NY 10001; (212) 736-4433. An information management system, PC/Focus is a personal computer implementation of the mainframe Focus package. The new release of Focus includes TableTalk, a window-driven natural language interface. \$1595 (direct order)

PHONCHEK Runs on IBM Personal Computer, XT, and PCjr. XIOX

Corp., 411 Borel Ave., San Mateo, CA 94402; (415) 571-7911. PhoneChek is a telephone management package that lets you enter information from telephone bills and then analyze telephone use and costs in a variety of ways. \$279 (retail)

PLEASE Runs on IBM Personal Computer (128k, two drives). Hayes Microcomputer Products, Inc., 5923 Peachtree Industrial Blvd., Norcross, GA 30092; (404) 449-8791. Please is a data management system that is designed to organize information by simplifying data input and output. The program can handle several million records per data base (depending on the system capacity) with up to 2000 characters and 99 fields per record. \$349 (retail)

▲ Review, page 41

PRECEDENT LEGAL ACCOUNTING SYSTEM Runs on TRS-80 Model II and 12. Tandy Corp./Radio Shack, 1800 One Tandy Center, Fort Worth, TX 76102. Precedent is a legal accounting system that includes integrated time and billing, general ledger and cash disbursements capabilities. \$795 (retail)

THE PROFIT CENTER Runs on IBM Personal Computer, XT; Compaq. Prentice-Hall, 200 Old Tappan Rd., Old Tappan, NJ 07657; (201) 592-2640 The first two packages in the Profit Center series of business software are General Accounting and Business Word Processor. The Master Menu package, available with the software, integrates each of the applications in the series so they can work together. \$250 (word processor); \$595 (general accounting) (retail)

▲ Review, page 38

REPORT MANAGER Runs on IBM Personal Computer. Datamension Corp., 615 Academy Dr., Northbrook, IL 60062; (312) 564-5060. Report Manager is a three-dimensional spreadsheet that lets you choose from over 250 graphics characters to help make complex graphs and charts easier to follow. \$495 (retail or direct order)

R WORD Runs on IBM Personal Computer and TI Professional. R Systems, Inc., 11450 Pagemill Rd.,

Dallas, TX 75243; (214) 343-9188. Billed as an advanced word processing package, R Word is a word and file processing system similar to the package of the same name for larger computers. \$395 (retail or direct order)

SIMPLY PERFECT Runs on Apple IIe and IIc. Hilleman House Inc., 10237 Yellow Circle Dr., Minnetonka, MN 55343; (612) 933-2460. Simply Perfect is an integrated package of word processor, spell checker, calculating data base, and reports generator. \$189.95 (direct order)

SOFTWARE 16 ACCOUNTING Runs on IBM Personal Computer and XT, DEC Rainbow 100+, and Wang Professional. Softran Corp., 153 Pierrepont St., Brooklyn, NY 11201; (212) 875-0045. Designed for small business, Software 16 Accounting consists of six separate modules: accounts receivable, accounts payable, inventory management, sales order, payroll and general ledger. \$795 (retail or direct order)

PERFORMANCE

APPLE SOURCELINK Runs on Apple II series. Source Telecomputing Corp., 1616 Anderson Rd., McLean, VA 22102; (703) 734-7500. The second in the STC series of communications software designed to supplement the use of The Source information service, Apple Sourcelink is compatible with Apple, Hayes and Transend modems. \$29.95 (direct order)

ASSEMBLY LANGUAGE TUTOR Runs on all Atari series. Microlaser Software, Inc., Box F, Mendon, NY 14506; (716) 624-9318. Assembly language tutor teaches machine language programming on Atari computers with working examples. \$49.95 (direct order)

ATARI PROOFREADER Runs on all Atari series. Atari, Inc., 1265 Borregas Ave., P.O. Box 427, Sunnyvale, CA 94086; (408) 745-2000. A spelling checker for the AtariWriter word processing program, Atari Proofreader has a dictionary of 36,000 words. Typos or spelling errors are

highlighted and you then either correct the mistake or flip through the dictionary for a correct spelling. \$49.95 (retail)

AUTHOR, AUTHOR Runs on CP/M-based systems. Fourth Street Software, 14045 Dinkytown Station, Minneapolis, MN 55414; (612) 339-3339. Aimed specifically at writers, this package is designed to make writing, organizing and printing on a personal computer easier and more effective. \$10 (direct order)

BRIEFCASE PROGRAMS Runs on TRS-80 Model 100; NEC PC-8201A. Chattanooga Systems Associates, P.O. Box 22261, Chattanooga, TN 37422; (615) 892-2339. Developed for the most popular briefcase portable computers, the three programs include: Autopen, a word processor; Book, a bookkeeping system; and Trip, an expense account record. (retail or direct order)

CLICKART Runs on Apple Macintosh. T/Maker Co., 2115 Landings Dr., Mountain View, CA 94043; (415) 962-0195. ClickArt is a collection of 100 professionally drawn images for use with the Macintosh that can be integrated into any MacPaint or MacWrite file as is or in a modified form. \$49.95 (retail or direct order)

COMMTRADER Runs on IBM Personal Computer. Market Data Systems, 3835 Lamar Ave., Memphis, TN 38118; (800) 434-4413. Commtrader is designed to provide a real-time price quotation service with automatic transfer of data from memory to disk storage, automatic updates and a variety of graphic features. \$1500 (direct order)

CUTILITIES PACKAGE Runs on IBM Personal Computer, XT with 128k two disk drives and C-compiler. Software Labs, 1221 Matisse St., Sunnyvale, CA 94087; (408) 730-8108. Designed to enable C programmers to call functions that control screen, peripherals, graphics, animation and math workings, this package is designed to provide comprehensive input/output control. \$119 (direct order)

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DISK+ *Runs on TRS-80 Model 100. Portable Computer Support Group, 11035 Harry Hines Blvd., #207, Dallas, TX 75229; (214) 351-0564.* Disk+ is a file transfer utility package for use with the Model 100 portable computer and another personal computer. \$69.95 (retail)

FRIENDLY WRITER *Runs on Columbia; Compaq; Corona; Eagle Spirit; IBM Personal Computer, XT, PCjr. FriendlySoft, Inc., 3638 W. Pioneer Pkwy., Arlington, TX 76013; (817) 277-9378.* FriendlyWriter, a word processing program that comes with a 70,000-word spelling checker called FriendlySpeller, is designed for either business or personal use. The program features one key-stroke operation, on-screen formatting and complete searching and copying features. \$69.95 (direct order)

▲ Review, page 47

IMPORT! *Runs on DEC Rainbow. Vertex Systems, 7950 W. 4th St., Los Angeles, CA 90048; (213) 938-0857.* A file transfer utility, Import! reads and copies to a formatted DEC Rainbow disk—in either CP/M or MS-DOS—from over 25 different disk formats. \$124.50 (retail or direct order)

INVESTMENT MANAGER *Runs on IBM Personal Computer; DEC Rainbow; Wang Professional; NEC APC; NCR DecisionMate V. International Microcomputer Software, Inc., 633 5th Ave., San Rafael, CA 94901; (415) 454-7101.* Investment Manager is designed to provide serious investors, professionals and organizations with a method of measuring investment performances. \$275 (retail)

▲ Review, page 46

JANE *Runs on Apple II series; IBM Personal Computer, PCjr; Commodore 64. Arktronics Corp., 113 S. 4th*

Ave., Ann Arbor, MI 48104; (313) 769-7253. Jane is an integrated package combining word processing, spreadsheet and list management functions through the use of symbols, windows and a mouse. New application programs for the Jane package, which includes the mouse, can be retrofitted as they become available as well. \$295 (retail)

MCPICT *Runs on Apple Macintosh. Magnum Software, 21115 Devonshire St., Suite 337, Chatsworth, CA 91311; (818) 700-0510.* McPic is a library of 130 pictures created by professional artists that can be used as is or customized into a MacWrite or MacPaint file. \$49.95 (direct order)

MEGAMERGE *Runs on Apple Macintosh. Megahaus Corp., 5703 Oberlin Dr., San Diego, CA 92121; (619) 450-1230.* MegaMerge is a mail merging program designed to work with the MacWrite word processing package to produce form letters, mailing lists and labels. \$125 (retail)

MICROSOFT CHART *Runs on Apple Macintosh; IBM Personal Computer. Microsoft Corp., 10700 Northrup Way, Bellevue, WA 98004; (206) 828-8080.* Microsoft Chart is a business graphics package that allows you to prepare presentation-quality charts from information generated by any program that produces standard DIF or ASCII files. The program presents you with graphic examples of different chart formats on the screen in a visual "gallery" from which you select a format. \$250 (retail)

▲ Review, page 45

MYCALC *Runs on IBM Personal Computer, PCjr; CP/M-based systems. The Software Toolworks, 15233 Ventura Blvd., Sherman Oaks, CA 91403; (818) 986-4885.* An inexpensive electronic spreadsheet, Mycalc features sorting, what-if capabilities, and 23 help screens. \$59.95 (retail or direct order)

MY WORD! *Runs on the IBM Personal Computer. TNT Software, Inc., 34069 Hainseville Rd., Round Lake, IL 60073; (312) 223-0832.* A word processing program, My Word! is an

emulation of the WordStar program with additional unique features. \$25 (direct order)

NEVADA PASCAL *Runs on CP/M-based systems. Ellis Computing, Inc., 3917 Noriega St., San Francisco, CA 94122; (415) 753-0186.* Nevada Pascal includes the Pascal programming language for CP/M systems and a code compiler. \$39.95 (direct order)

OPTIONVUE PLUS *Runs on the IBM Personal Computer, XT. Star Value Software, 12218 Scribe Dr., Austin, TX 78759; (512) 837-5498.* An option investment strategy program, OptionVue Plus incorporates the Dow Jones News/Retrieval service and is designed to let investors optimize current option positions and investigate new opportunities quickly. \$495 (direct order)

PC-CALCULATOR *Runs on IBM Personal Computer. Evergreen Software Products, Inc., 11 Robinwood Ct., Lancaster, NY 14086; (716) 683-4603.* PC-Calculator lets the computer function as a desktop calculator, performing all the standard math functions with complex trigonometric and statistical capabilities as well. \$39.95 (retail or direct order)

PC-DIAL/LOG *Runs on the IBM Personal Computer. CMC International, Inc., 1720 130th Ave., N.E., Bellevue, WA 98005; (206) 885-1600.* PC-Dial/Log is a personal telephone management system that digitally records, saves and sends voice messages by using a telephone connected to a personal computer. \$1000 (retail)

PC/INTERCOMM *Runs on IBM Personal Computer, XT; TRS-80 Model 2000; Zenith Z-100. Mark of the Unicorn, Inc., 222 3rd St., Cambridge, MA 02142; (617) 576-2760.* PC/InterComm is a communications software package that allows your personal computer to emulate a DEC VT100 terminal and send or receive data at speeds of up to 19,200 baud. The program also lets you access data bases like The Source. \$99 (retail)

PROGRAM MAP *Runs on CP/M-based systems. The Software Store, 706 Chippewa Square, Marquette, MI 49855; (906) 228-7622.* A cross reference tool for programs written in Microsoft BASIC, Program Map is designed to speed program development by helping you debug, modify and document your BASIC programs quickly. \$150 (direct order)

RAGS TO RICHES *Runs on IBM Personal Computer, PCjr. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129; (800) 972-8800.* Rags To Riches is a series of business software designed to provide small businesses with accounting programs. The Rags To Riches line includes general ledger, accounts payable, accounts receivable and sales. \$99.95 each (retail)

▲ Review, page 43

R:BASE CLOUT *Runs on PC-DOS; MS-DOS; CTOS; BTOS; Unix-based systems. Microrim, Inc., 1750 112th Ave. N.E., Bellevue, WA 98004; (206) 453-6017.* R:base Clout is a natural language interface for use with the R:base series of relational data base management products. Clout has a built-in dictionary of 200 words and allows you to supplement the list. \$195 (retail)

▲ Review, page 44

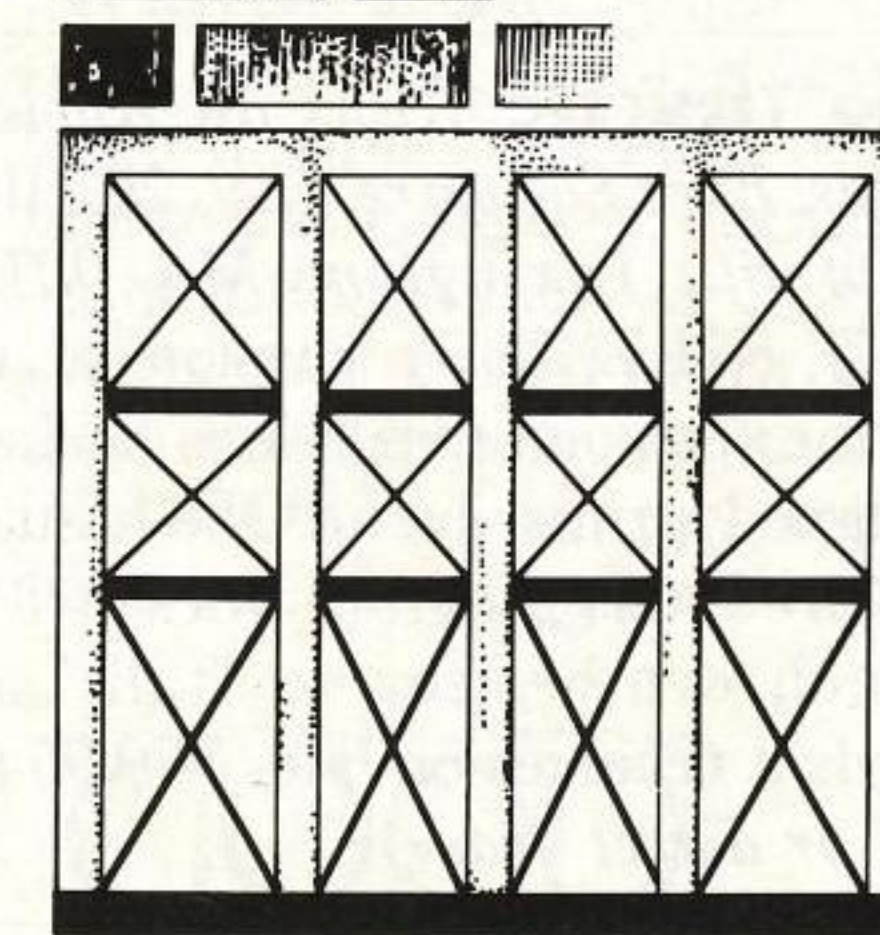
SAPANA: CARDFILE *Runs on IBM Personal Computer, PCjr. Sapana Micro Software, 1305 S. Rouse, Pittsburgh, KS 66762; (316) 231-5023.* A filing system, Sapana:Cardfile can store and retrieve any kind of information, allowing you to create your own forms for data entry. \$195 (direct order)

SET-FX+ *Runs on Compaq; IBM Personal Computer, XT, PCjr. Soft-Style, Inc., 7192 Kalaniana'ole Hwy., Suite 205, Honolulu, HI 96825; (800) 367-5600.* Set-FX+, designed to work with all Epson printers, allows you to select print modes, produce special character sets and custom fonts, and rotate document printing 90 degrees. \$59.95 (retail)

SPEED READING...THE COMPUTER COURSE *Runs on Apple IIe; IBM Personal Computer. Bureau of Business Practice, 24 Rope Ferry*

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TALKING TERMEXEC Runs on Apple II series. Exec Software, Inc., 201 Waltham St., Lexington, MA 02173; (617) 862-3170. A version of the TermExec communications package designed primarily for the visually impaired, this program works with a speech synthesizer to "talk" any words it receives on-line. \$79.95 (retail or direct order)

TOTL.MONEYMINDER Runs on the Commodore 64. Totl Software, Inc., 1555 3rd Ave., Walnut Creek, CA 94596; (415) 943-7877. A home accounting system, Totl.Moneyminder is designed to complement other Totl software products. \$39.95 (retail)

UTILITIES FOR THE APPLE MACINTOSH Runs on the Apple Macintosh. Basic Business Software, Inc., P.O. Box 26311, Las Vegas, NV 89126; (702) 876-9493. Working with MS-BASIC on the Macintosh, this package contains eight utility programs for manipulating and transferring files. \$45 (retail or direct order)

WALL STREET WINDOW Runs on IBM Personal Computer (192k, color graphics card, two drives, printer). R&D Software, P.O. Box 2727, Reston, VA 22090; (703) 476-6597. Wall Street Window is designed to combine technical stock analysis and portfolio management, using data base communications, color graphic displays and printout, and spreadsheet interface. \$395 (retail)

WOMEN'S WARE Runs on the IBM Personal Computer. The Neon Software Co., 55 High St., P.O. Box

1540, Middletown, CT 06457; (203) 346-6322. Women's Ware is a seven-package series of home management software aimed at "today's busy, two-career woman." The line includes Budget, Calendar, Checkbook, Directory, Filebox, Freefile and Recipe. \$49.95 (each) \$79.95 (Freefile) (retail)

LEARNING

AEC SPELLING Runs on Apple II series; all Atari series; Commodore 64; IBM Personal Computer, PCjr; TRS-80 Color Computer. American Educational Computer Software, 2450 Embarcadero Way, Palo Alto, CA 94303; (415) 494-2021. Designed specifically for home use, AEC Spelling parallels the kind of spelling instruction given in schools to teach proper skills to students in grades 2 through 8. \$39.95 (retail or direct order)

ALGEBRA PLUS Runs on IBM Personal Computer (color graphics card), PCjr. Microglyph, P.O. Box 37110, Albuquerque, NM 87176. Algebra Plus provides interactive review and practice of vocabulary, concepts and problems for real number systems, equations, formulas, graphing, polynomials, factoring and word problems for high school students. \$69.95 (direct order)

BASIC SKILLS MATH INSTRUCTIONAL SERIES Runs on IBM Personal Computer. Control Data Corp., 8100 34th Ave., Bloomington, MN 55420; (612) 853-8100. For grades 3 through 8, this series contains 19 topics designed to improve elementary math skills. Topics include areas such as addition, subtraction, multiplication, division, fractions, decimals, ratios and basic geometry concepts and measurements. \$69.95 to \$99.95 (retail or direct order)

CHILDPACE Runs on Apple II series; Atari 800; IBM Personal Computer, PCjr; TRS-80 Color Computer. Computorose, Inc., 2012 E. Randol Mill, Suite 223, Arlington, TX 76011; (817) 277-9153. Aimed at parents of children from ages 3 months to 5 years, Childpace is a

child development evaluation program that is designed to help track growth areas like coordination, language and personal/social skills. \$39.95 (retail)

▲ Review, page 51

CLASSMATE Runs on Apple II series; IBM Personal Computer, XT, PCjr. Davidson & Associates, 6069 Groveoak Pl., #12, Rancho Palos Verdes, CA 90274; (213) 383-9473. A classroom grading and attendance package, Classmate lets you enter, modify and store information lists of up to 51 students each. \$49.95 (direct order)

COLOR LEARNING Runs on Apple IIe, II Plus. S.A. Software and The Child Center, 10611 Tenbrook Dr., Silver Spring, MD 20901. Color Learning consists of four interactive games designed to teach the identification and matching of colors. \$29.95 (direct order)

COMPUTER CONCEPTS Runs on IBM Personal Computer, XT. Continuous Learning Corp., 151 Erie St., Cambridge, MA 02139; (617) 491-7126. For the first-time computer user, this program provides color graphics lessons on the keyboard, storage and memory, files and editing, and data bases. The nine-disk package also includes a word processing module for continued use. \$249 (direct order)

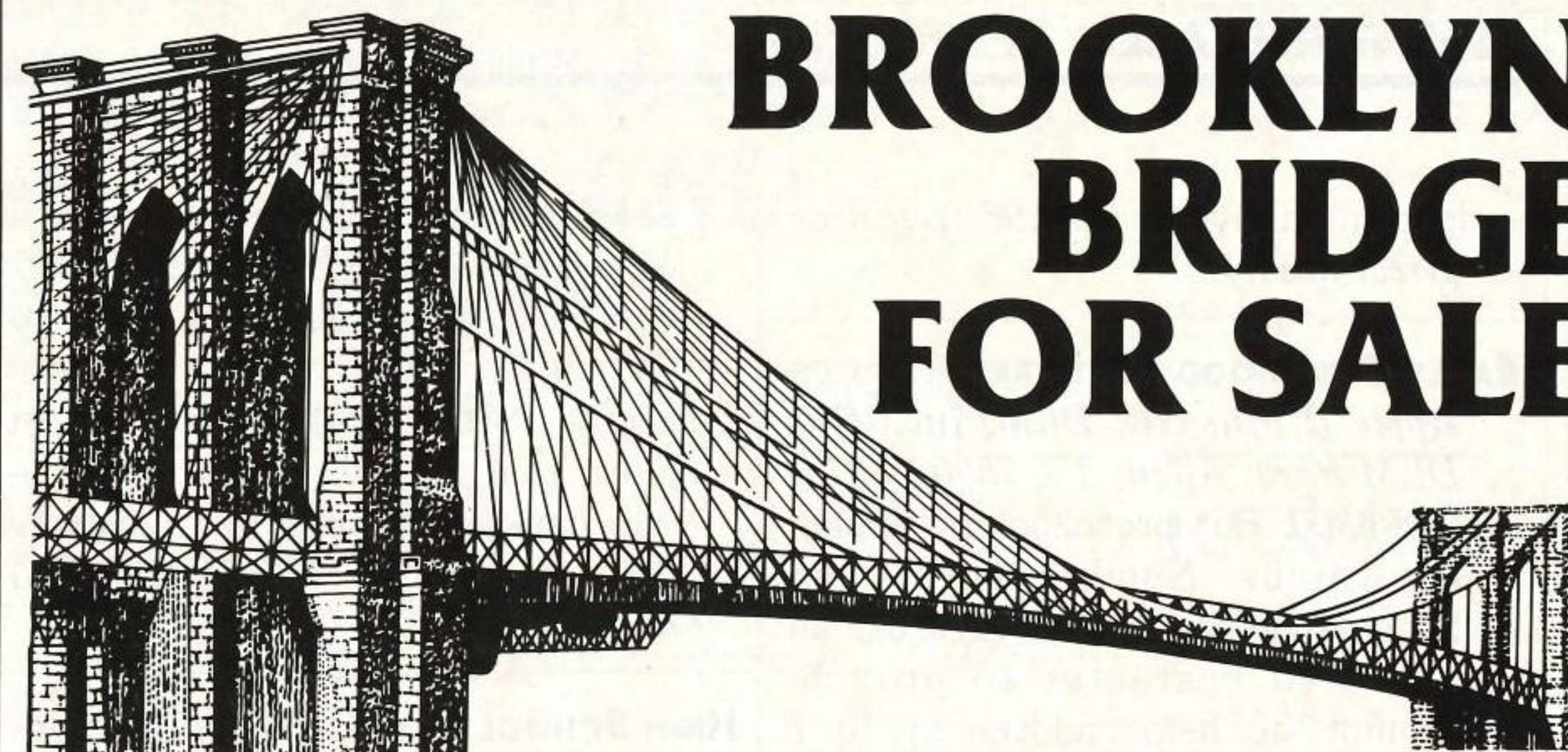
CYBERLOGO TURTLE Runs on Apple II series. Reston Computer Group, Reston Publishing Co., Inc., 11480 Sunset Hills Rd., Reston, VA 22090; (703) 437-8900. Cyberlogo Turtle is a Logo programming language package that teaches you to create "turtle graphics" by writing simple Logo programs. The program has sketch, playground, school and help modes. \$55 (retail or direct order)

▲ Review, page 52

DINOSAURS Runs on Apple IIe; Acorn; Commodore 64; IBM Personal Computer. Advanced Ideas, Inc., 2550 Ninth St., Suite 104, Oakland, CA 94710; (415) 526-9100. Targeted for children ages 2 to 5, Dinosaurs transports prehistoric animals into modern times with five educational games that concentrate on matching, sorting and other preschool

▲ Review, page 49

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ELEMENTARY ALGEBRA Runs on Apple II series. Control Data Corp., 8100 34th St., Bloomington, MN 55420; (612) 853-8100. Elementary Algebra is made up of nine topics commonly taught in a first-year algebra course and features self-paced instructional exercises. \$100 (retail or direct order)

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▲ Review, page 50

HIGH SCHOOL SKILLS IN MATH INSTRUCTIONAL SERIES Runs on IBM Personal Computer. Control Data Corp., 8100 34th St., Bloomington, MN 55420; (612) 853-8100. Containing eight math programs for grades 9 through 12, this series includes topics like basic number ideas, math sentences, geometry and measurement. \$69.95 (retail or direct order)

INSTANT TUTOR! Runs on the IBM Personal Computer. Data Processing Educational Corp., 4588 Kenny Rd., Columbus, OH 43220; (800) 227-1617, ext. 115. A series of training software, the Instant Tutor! line includes How to Use Your IBM Per-

sonal Computer and DOS 1.1, Beginning Instructions for WordStar, Beginning Instructions for dBASE II and Beginning Instructions for SuperCalc. \$59.95 (direct order)

LESSONWARE Runs on IBM Personal Computer, XT, PCjr. Software Future, Inc., 70 Gainsborough Rd., Holbrook, NY 11741; (516) 472-1778. LessonWare is a course authoring program that allows a teacher to design instruction applications where text is presented as a stimulus. \$35 (direct order)

MATH SCHOOL Runs on IBM Personal Computer, XT, PCjr, Portable. Stillwell Software Products, 16043 N. 43rd Ave., Glendale, AZ 85306. An arithmetic drill program, Math School has three difficulty levels to work with grade school and junior high school students. \$15 (direct order)

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Review, page 53

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BEYOND CASTLE WOLFENSTEIN Runs on Apple II series; Commodore 64. Muse Software, 347 N. Charles S Baltimore, MD 21201; (301) 659-7212. In this sequel to Cas Wolfenstein, an adventure game s in World War II, the hero is se behind enemy lines to infiltrate H ler's Berlin bunker for an attempt the Fuhrer's life. \$34.95 (retail direct order)

▲ Review, page 58

BLACK BELT Runs on Apple II series. Earthware Computer Services, P.O. Box 30039, Eugene, OR 97403. This simulation of a tae kwon championship sparring match, do with fast arcade action, five o ponents exist in the computer. O or two persons may play as soon you open the package. The five o ponents represent the different b levels. \$29.95 (retail)

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▲ Review, page 56

GRAMACY—THE WORD GAME Runs on IBM Personal Computer and MS-DOS-based systems. Robert L. Nicolai, 4038 N. Ninth St., St. Louis, MO 63147; (312) 621-0730. In this educational game, the player is required to find all words of four or more letters in a word picked at random from the program's data bank. The program will compute the correct solution while the player is entering his words and report the number of words it has found. \$29.95 (direct order)

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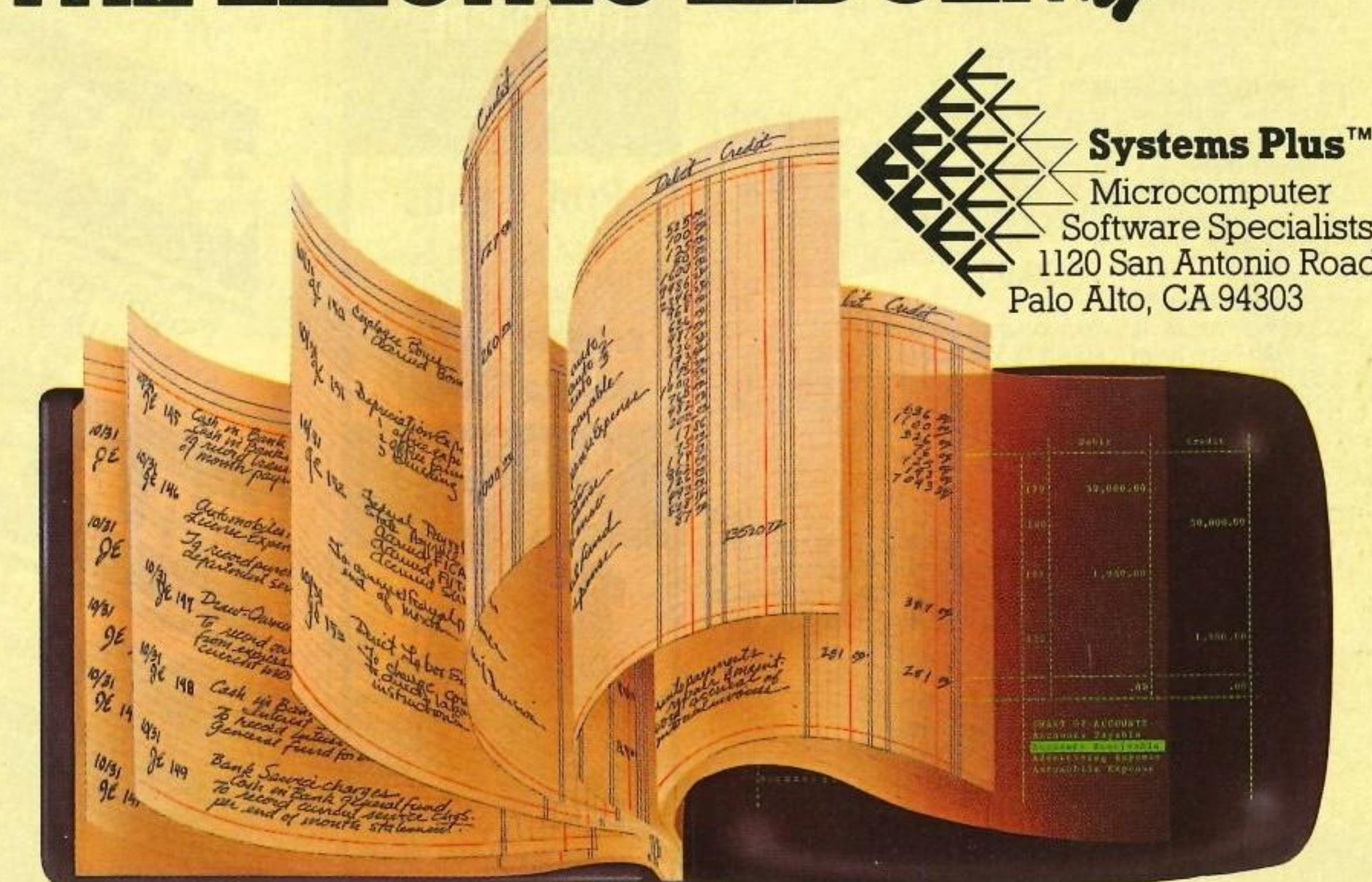
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▲ Review, page 55

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NEW RELEASES/LEISURE

ROLLO AND THE BRUSH BROS. Runs on IBM Personal Computer (color graphics card). Windmill Software, Inc., P.O. Box 1008, Burlington, Ontario L7P 3S9, Canada; (416) 336-3353. As you take on the job of Rollo in this arcade-style game, your aim is to paint squares around the bristly Brush Bros. \$39.95 (retail)

SARGON III Runs on Apple Macintosh. Hayden Software Co., 600 Suffolk St., Lowell, MA 01853; (617) 937-0200. Sargon III, the latest release of the popular chess program, is now available in an enhanced version to take advantage of the capabilities of the Macintosh computer. \$49.95 (retail or direct)
▲ Review, page 57

SLAMBALL Runs on the Commodore 64. Synapse, 5221 Central Ave., Richmond, CA 94804; (415) 527-7751. Up and down scrolling through four full screens, plus complete ball control and even a "TILT" feature are in this computer pinball game. \$34.95 (retail or direct order)
▲ Review, page 59

STAR SEARCH Runs on Apple II series. Earthware Computer Services, P.O. Box 30039, Eugene, OR 97403; (503) 344-3383. Suspecting the existence of a starbase on Pluto, players captain ships and seek out planets to explore. \$45 (retail)

STAR TRADER Runs on the TRS-80 Color Computer. Computerware, Box 668, 4403 Manchester Ave., Suite 102, Encinitas, CA 92024; (619) 436-3512. In this graphic simulation you assume the role of a merchant ship captain in the far future. \$24.95 (cassette), \$27.95 (disk) (retail or direct order)

SURVIVAL Runs on all Atari series. Task Force Games, 1110 N. Fillmore, Amarillo, TX 79107; (806) 376-6229. Survival recreates the struggle to survive in a hostile alien world. The computer controls the encounters and displays a map showing your location. The game has three "survival" games and one "hunt" game. \$27.95 (retail or direct order)

THE COMMODORE 64 MUSIC MASTER Runs on the Commodore 64. Softext,

Inc., 380 Green St., P.O. Box 20 Cambridge, MA 02139; (617) 876-2333. This book/software package teaches sound synthesis and music composition while exploring sophisticated programming skills. \$29.95 (retail)

THE ODDSMAKER Runs on the Apple series; IBM Personal Computer; PCjr; Commodore 64. CZ Software, 358 Forest Rd., South Yarmouth, MA 02664; (800) 225-7136, in Massachusetts (800) 352-7787. The gaming program accepts the wage, calculates the odds, calculates the pay-outs, totals the betting pools, allows you to take a house cut and prints the tickets. It is not limited to a specific sport. \$44.95 (retail or direct order)

VIDEO-TRAC Runs on the Commodore 64. The Computer Company, 15 Woodhollow Rd., Marlton, NJ 08053; (609) 983-9109. This program tracks your home entertainment collection—videos, record tapes, by artist, group or title. Menu-driven with alpha search and error messages, Video-trac shows costs, dates, formats, comments, descriptions, titles, groups, etc. \$19.95 (retail)

WAR OF THE WORLDS Runs on all Atari systems. Task Force Games, 1110 N. Fillmore, Amarillo, TX 79107; (806) 376-6229. This game recreates the life and death struggle between the Martians and the humans, as depicted by H.G. Wells in his classic novel. You are the commander of the human forces, and must deal with computer controlled Martian invaders. \$27.95 (retail or direct order)

WORD ALERT SERIES Runs on Apple II. The Regents/ALA Company, Park Ave., New York, NY 10017; (212) 889-2788. The first two games in the collection, Word Race and Clue In, were developed with the adolescent and adult language arts and English as a second language student in mind. Both games have four of their 10 files already filled with low-level vocabulary items arranged in interesting categories. \$29.95 (direct order)



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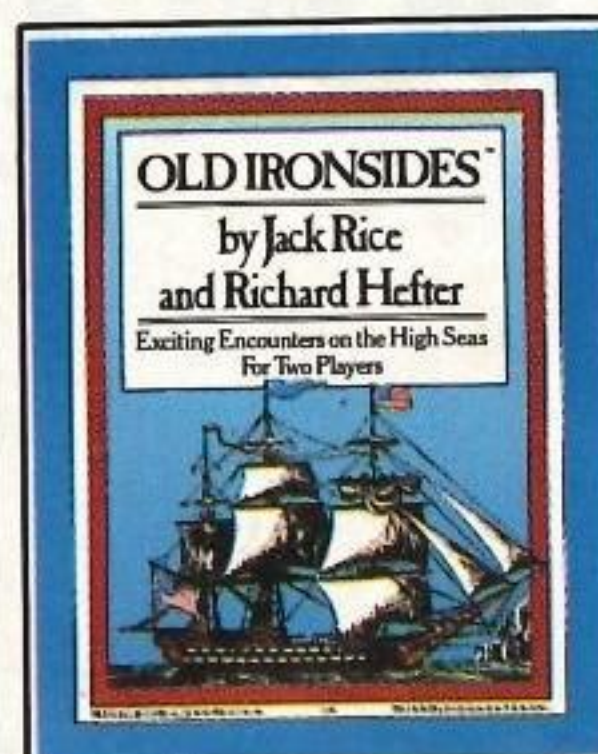
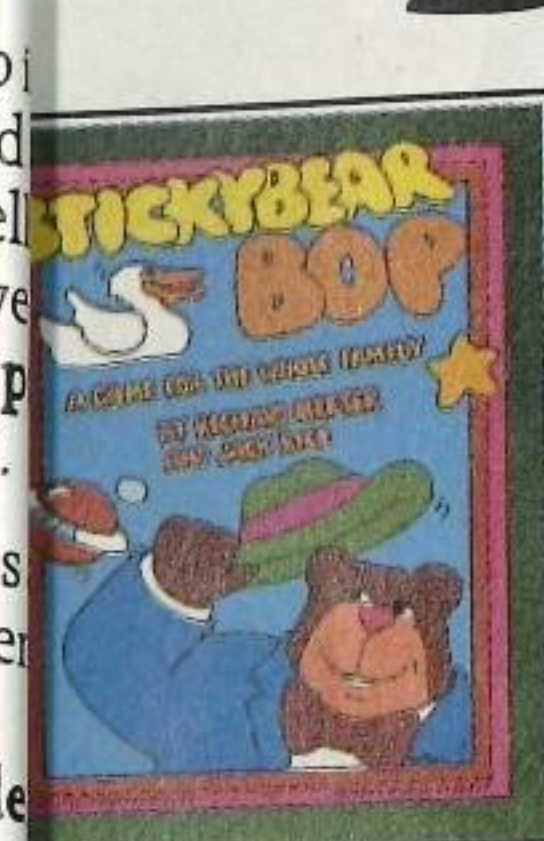
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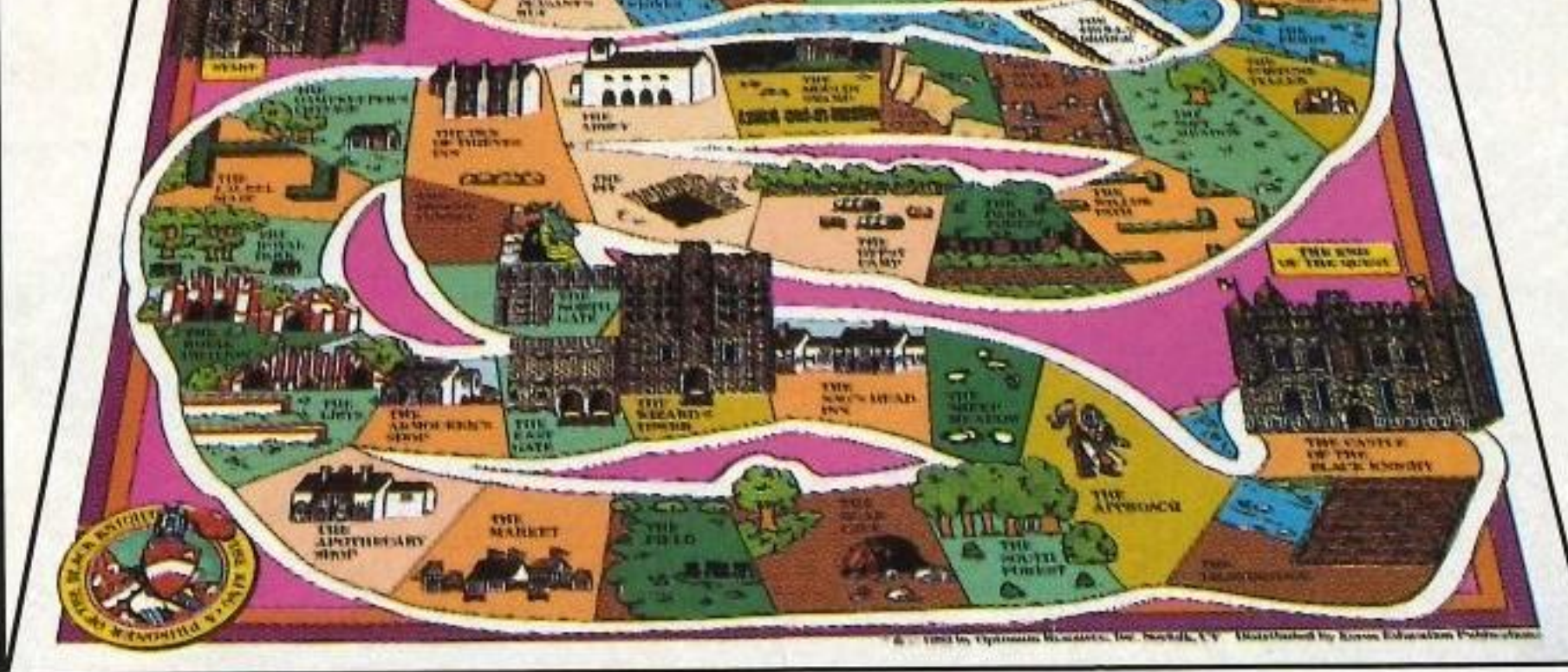
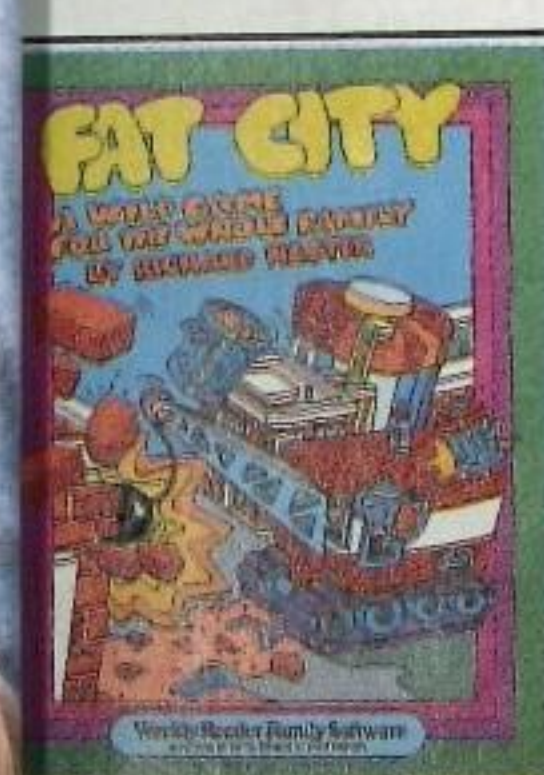
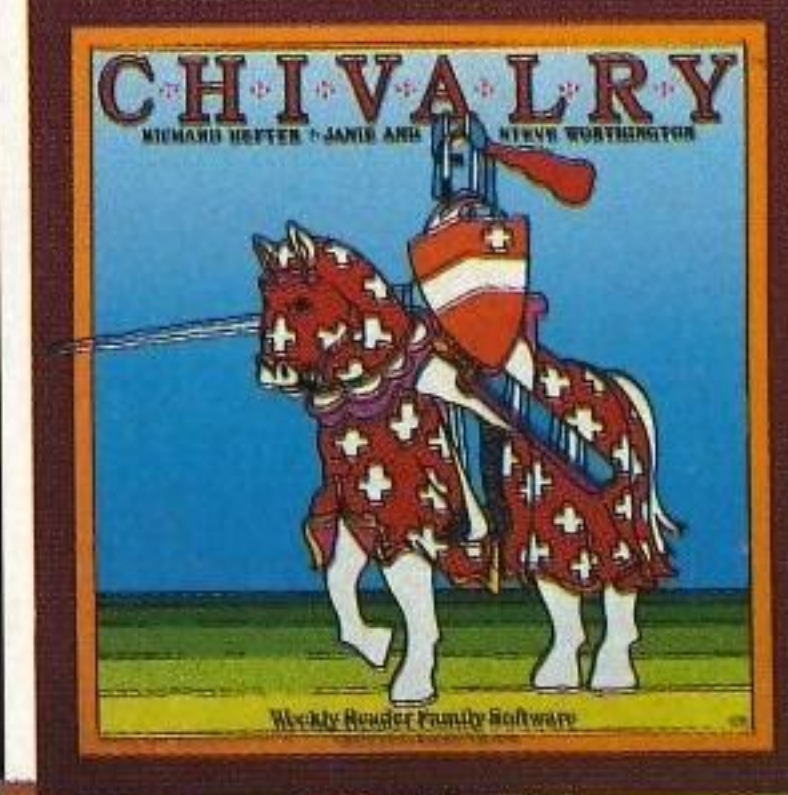
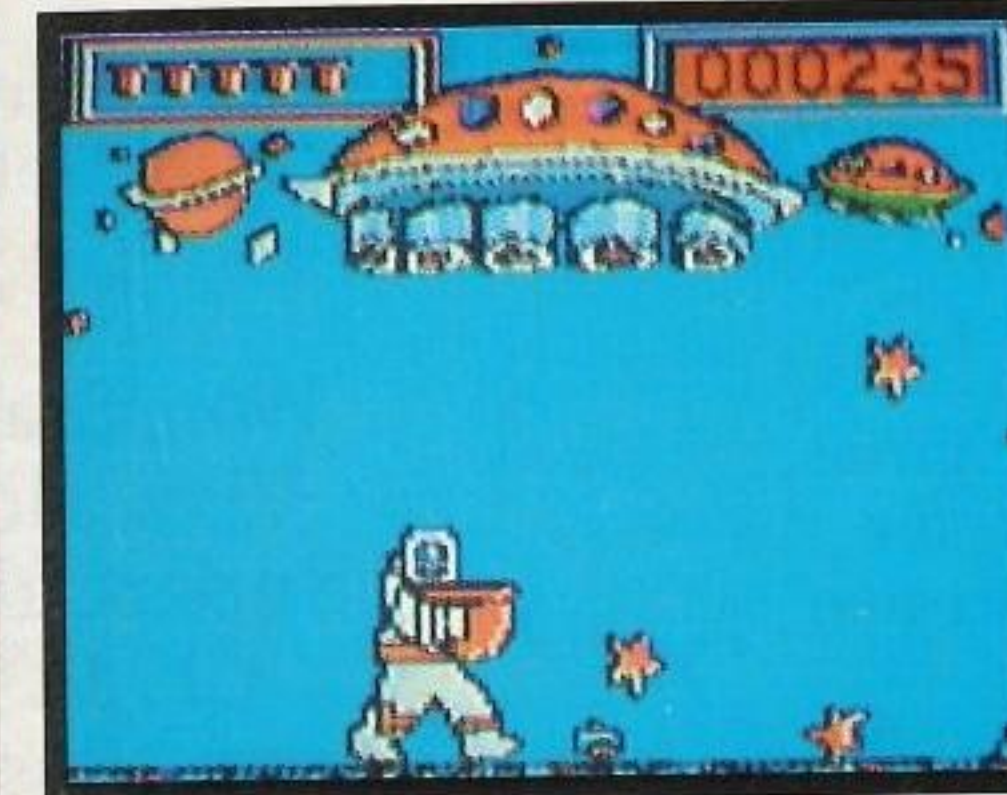
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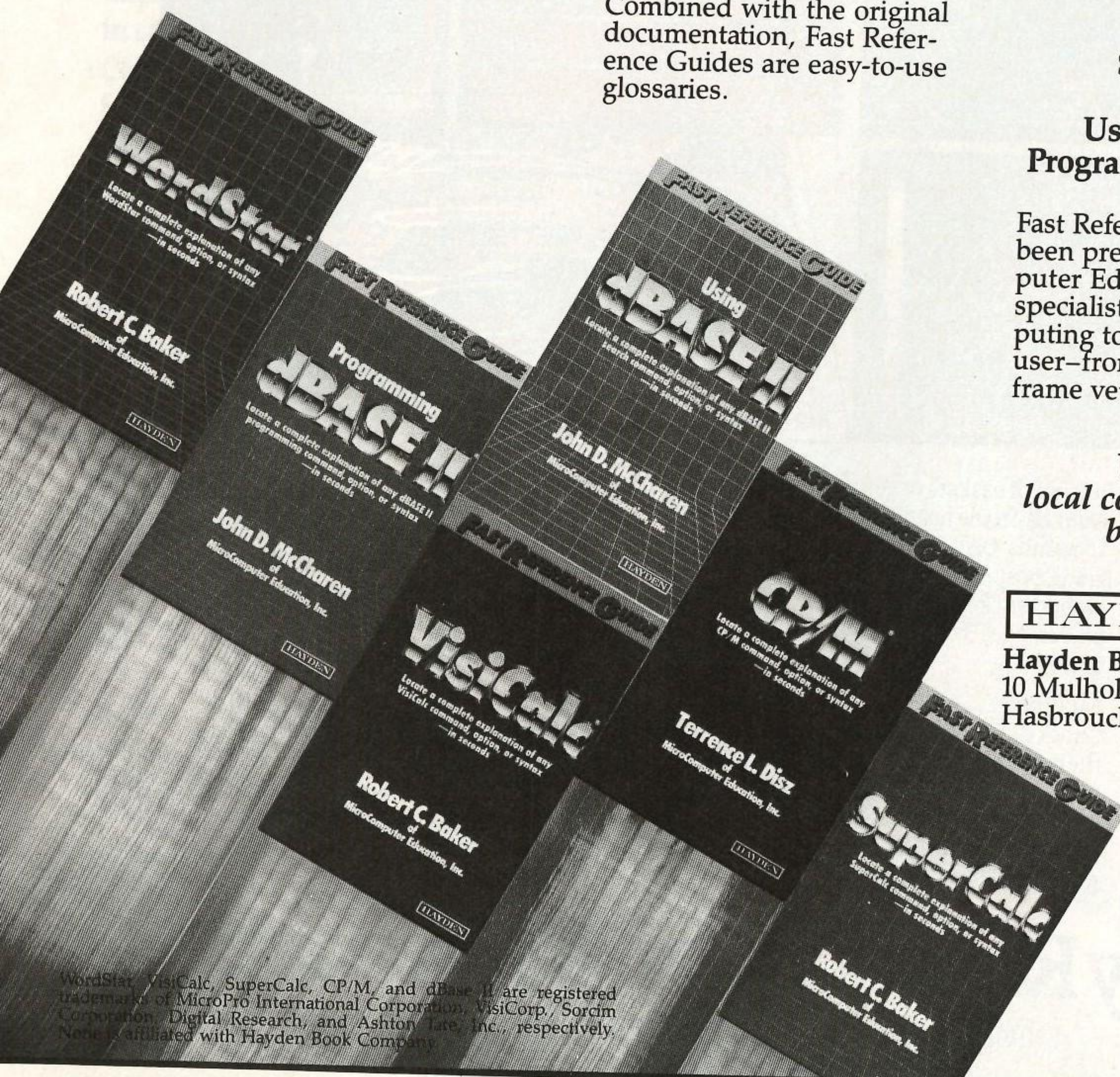
**PERSONAL
SOFTWARE**

AUGUST • 1984

TOP 20

These are the best programs this month, selected by *Personal Software's* editors and evaluated by our staff. These software packages are divided into four categories: Productivity, Performance, Learning and Leisure. We have chosen the best five in each category after a critical evaluation of the 126 new programs released this month.

**dBASE III • THE PROFIT CENTER • FRAMEWORK
MICROSOFT PROJECT • PLEASE • RAGS TO RICHES
R:BASE CLOUT • MICROSOFT CHART
INVESTMENT MANAGER • FRIENDLYWRITER
DINOSAURS • FACT AND FICTION TOOL KIT
CHILDPACE • CYBERLOGO TURTLE • PC EXPERT
MOUSEPAINT • FLIGHT SIMULATOR • SARGON III
BEYOND CASTLE WOLFENSTEIN • SLAMBALL**



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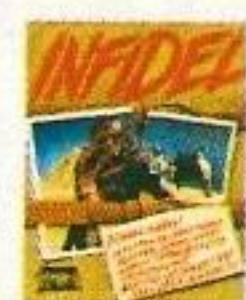
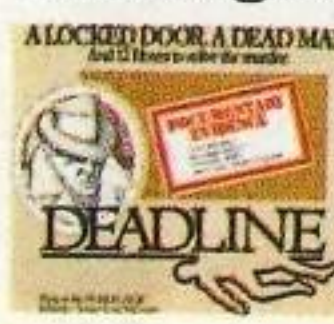
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A New And Improved dBASE

dBASE III runs on IBM Personal Computer, XT and compatibles with minimum 256k and two disk drives required; \$695; retail; Ashton-Tate, 10150 W. Jefferson Blvd., Culver City, CA 90230; (213) 204-5570.

If a "wish list" based on its alleged deficiencies was compiled for dBASE II, Ashton-Tate's best-selling data base management system, the net result would be very close to the list of enhancements that make up dBASE III, its heir apparent.

For example, dBASE III is now a contender in the "numbers game," with respectable credentials as to sorting-function speed, how many million records it can handle per data base and so on. Moreover, the product has on-line help and a *menu-driven shell*,

called "assist," designed to get the novice user over the hump of learning the program's many commands and exacting syntax.

In fact, there is little more than hyperbole in both these "improvements." That dBASE III can handle one billion records, each with 128 fields, loses its luster when you realize it would take a typical personal computer a matter of weeks to simply read through such a data base once, if indeed there were a disk large enough to hold it—in lieu of the more than 28 million floppies it would otherwise occupy. And while the new dBASE III assistance shell is helpful for the novice, it is no substitute for learning the actual commands. Indeed, this feature is best described by the code name it had at the Ashton-Tate development center: "Training Wheels."

People who use dBASE II only in the interactive mode—who do nothing more than define a data base, type their information in and then find pieces of information when necessary by querying the data base for, say, all prospects where the city field is Boston—will find dBASE III much easier to learn than

dBASE II. The much improved tutorial will go a long way to that end. But even the strictly interactive user of dBASE III may eventually decide that navigating through the menus is more trouble than it is worth. These users are likely to abandon "assist" and start typing in the commands directly.

Still, it was not interactive use that accounted for the great success of dBASE II. Adam Green, a consultant

who has made his living teaching and writing about dBASE II, is much closer to the heart of the matter when he calls the new dBASE III "the most mature, best-performing business programming language available on any computer."

Programming? Yes, I'm afraid so. While Green's "best-performing" superlative is a biased one, his basic

point is sound: The pre-eminence of dBASE II is attributable to its power as a programming language designed to create easy-to-use systems for managing data. With a modicum of programming skill and time, practically anyone can learn to use dBASE III to create a custom application that is idiot-proof and, given a few years to iron out the wrinkles, bug free.

I don't intend to sidestep the issue of performance. dBASE III is probably the equal of any data base management system on the market. But given the number of people who know the dBASE II language, this matter is almost irrelevant. The important thing is that dBASE III improves on dBASE II.

Some of the improvements are spectacular. A sort of 1000 records that takes an hour in dBASE II takes approximately one minute in dBASE III. Several fields can be sorted at the same time with dBASE III, whereas dBASE II was limited to one field per sort. Other improvements are more subtle. The syntax is more consistent. Calculations involving time are much easier because of the inclusion of a julian date data type. It is also possible to include

lengthy blocks of text—such as newspaper articles—in a data base, thanks to a "memo" data type that allows fields of up to 4000 characters and records as much as 500,000 characters long.

But other improvements may turn out to be less significant than they appear at first. For example, data base design theory would usually dictate that far fewer than 132 fields be used. It is usually far better to keep records smaller and build several separate files that can be joined as needed. And while the much faster sort is handy, any programmer will tell you that it is usually smarter as well as faster to use indexing, instead of sorting, when a large group of records must be reordered.

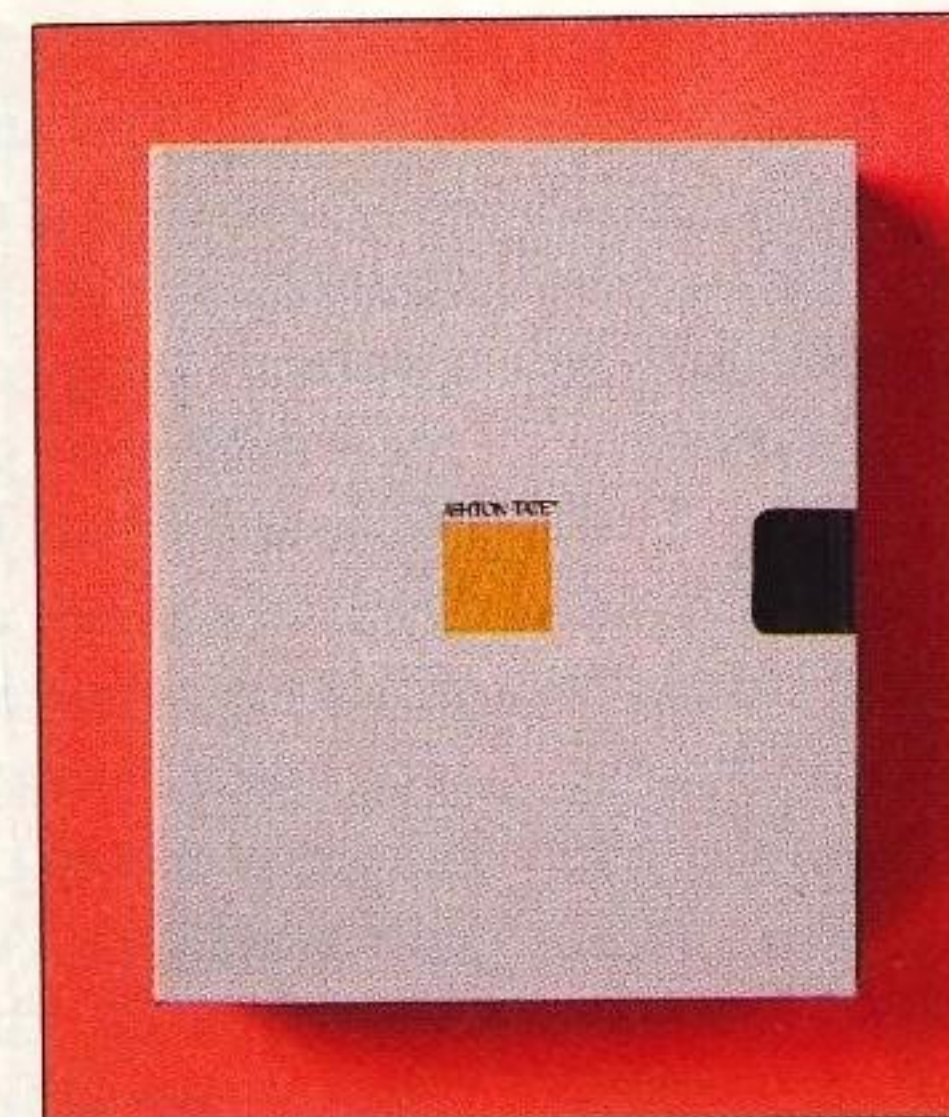
Of all the improvements made to dBASE II, the most significant to the dBASE programmer is the fact that the number of files that can be open at one time has been expanded from two to 10. With dBASE II, when a program needed to link information from more than two files, it was necessary to close and open files, a time-consuming process in any data base management system. Having the ability to maintain 10 open files does not really expand the limits of what dBASE can do, but it does significantly improve performance.

The large number of applications and data bases based on dBASE II can be largely converted to dBASE III by utilities supplied with the new software. Unfortunately, this conversion process does not change the logic of the existing programs or the structure of the data bases, which is necessary to take advantage of many of the improvements in dBASE III. Nevertheless, the \$200 upgrade to dBASE III offered by Ashton-Tate for registered owners of dBASE II for the IBM Personal Computer is bound to attract a large number of trade ins.

Finally, a word of comfort to owners of dBASE II for 8-bit computers (which will never be able to run the new product): dBASE III is not *that* much better. Which is only another way of saying that dBASE II is not so bad.

—Kevin Strehlo

For more information circle 101 on the reader's service card.



Profiting By Integration

■ **THE PROFIT CENTER** runs on IBM Personal Computer, XT, Portable; Compaq; other compatible systems. Apple Macintosh and Lisa versions are planned; \$150 for NEAT, \$250 for Business Word Processor, \$595 for General Accounting; retail; Prentice-Hall, Inc., Dept. GPD, 100 Sylvan Ave., Englewood Cliffs, NJ 07632; (201) 592-2704.

If there is one buzzword surrounding personal computer software that hums even louder than "user-friendly" these days, it is "integration." The concept of integration in software has been muddled by its increasingly liberal application. Not surprisingly, it is sometimes difficult to "integrate" software claims with reality.

The Profit Center is an accounting-centered series of business software which addresses the challenge of making application programs work together effectively with the equivalent of a traffic cop called the Master Menu—an "operating environment" program which allows application packages to share information and a common presentation. And therein, says Prentice-Hall, lies the integration that promises to make life a little easier for people working on a personal computer.

"The value of the product line is that all the products share data across dissimilar applications," explains John Kilcullen, marketing and sales coordinator for The Profit Center series at Prentice-Hall. "People typically build (integration) on afterwards. We designed integration into the series prior to going to the market."

The ability to "build bridges" across programs, as Kilcullen puts it, is important to people who need to use more than one application in the course of their daily business activities. And The Profit Center, aimed at people in small to medium-size businesses, is designed to let you choose the specialized applications you need and then integrate them

with the Master Menu—an alternative to all-in-one products such as Lotus 1-2-3. With The Profit Center series, you may want to start with a few accounting programs, for example, and add word processing and spreadsheet programs later.

The Master Menu is the heart of a business series which, by early 1985, the company says, will include nine accounting, six planning and analysis, three word processing, and two data base management programs. The first three application programs available in the series are General Accounting, Business Word Processing, and NEAT: The Time and Information Manager. But before getting into the applications packages, a quick study of the Master Menu—which is necessary to run any

of the application programs—is a must.

The Master Menu, for which you pay a \$25 fee that is refunded to you upon the purchase of an application program, performs a number of rather important housekeeping tasks. It lets you add a new application program such as General Accounting, see what applications you've already installed, specify the printers and disk drives you're working with, make the appropriate adjustments when adding hardware or software, manipulate files, activate a data security system, and modify applications when (and if) program enhancements become available from the company.

These features boil down to two important concepts: flexibility and sharing. In terms of flexibility, the Master Menu does an excellent job of removing restrictions on who and what can use The Profit Center by letting you use nearly any arrangement of floppy drives, hard disks and printers, and by allowing you to change this configuration easily.

Sharing, however, comprises the Master Menu's most important function. The Master Menu allows you to pass information from one application to another—from the general ledger in

General Accounting to a form letter in Business Word processing, for example. (The program is not a windowing environment, though, so you don't get to see more than one application on the screen at the same time.) The Master Menu also provides the many different applications in the series with—in a general way—a common menu system, command format and operating method.

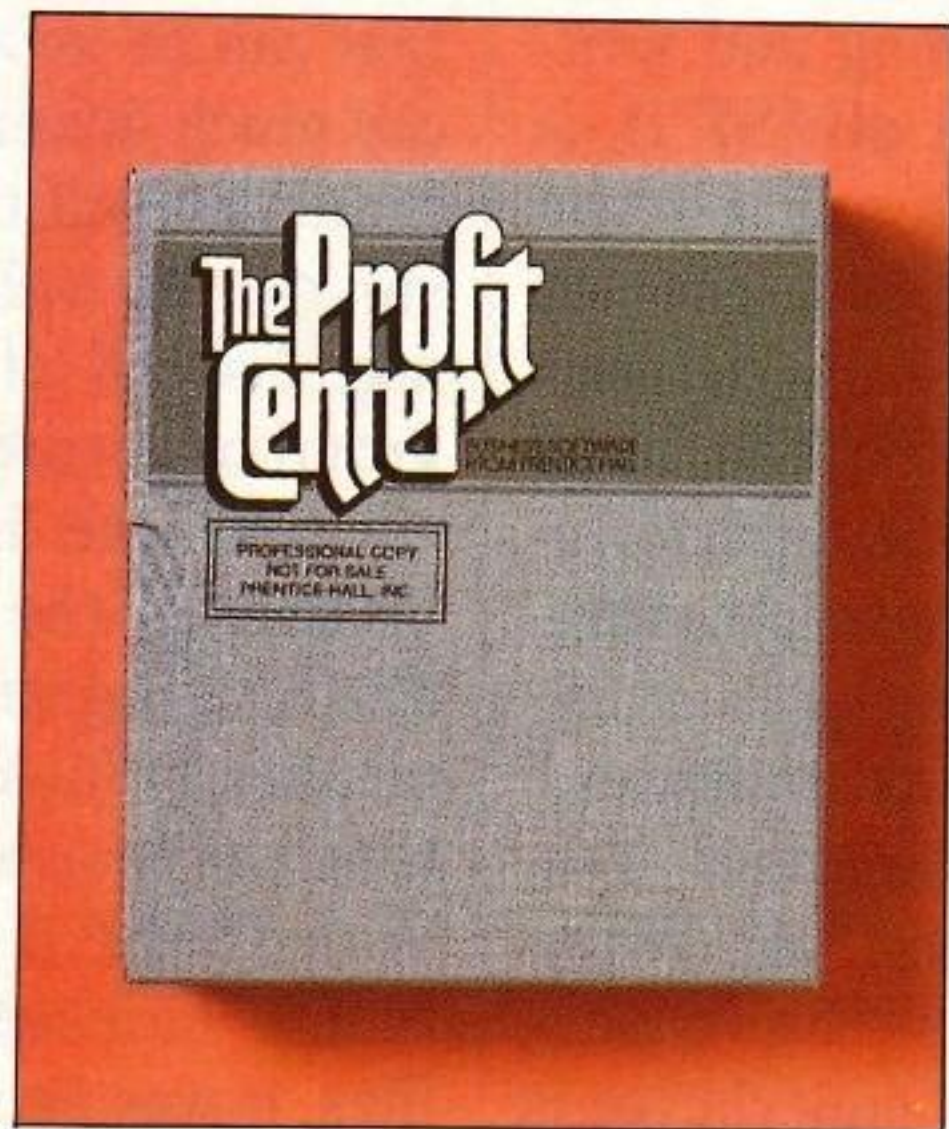
General Accounting, Business Word Processing, and NEAT—on their own—are effective business packages. General Accounting, which has subledgers for accounts receivable, accounts payable, and payroll in addition to a general ledger, features automatic recording and posting of transactions with a minimum of commands. Business Word Processor has form letter and report capabilities with extensive help screens, and NEAT has a little of most everything: clock and calendar, expense log, address book, notepad and scheduler. And joining their capabilities through the Master Menu—say, taking a memo from NEAT and a journal entry from Accounting to form a finishing report in Word Processor—makes The Profit Center really work as a cohesive business system.

The amount of work involved in learning how to use The Profit Center business system is reasonable, given the complexity of the applications. There, you begin by calling up a blank learning process is aided significantly by a "learning kit" which accompanies the Master Menu and each of the applications. The kit consists of a small booklet, a cassette tape and a practice data disk. It does not replace the more thorough application manual, but it does make getting started a good deal easier. The only problem here is that the learning kits are mailed to you after you buy the program, an unnecessary delay in getting started.

But what The Profit Center has to offer—a comprehensive line of business products that can share information and can be purchased as you need them—constitutes an attractive alternative for the businessman looking for a software system to handle his business needs.

—Christopher O'Malley

For more information circle 102 on the reader's service card.



An Integrated Business Package

■ **FRAMEWORK** runs on IBM Personal Computer (minimum 256k); \$695; retail; Ashton-Tate, 10150 W. Jefferson Blvd., Culver City, CA 90230; (310) 204-5570.

Ashton-Tate's Framework is one of the new breed of software packages which integrate word processing, spreadsheets, business graphics and data base management in one program.

But Framework does more than simply put all these functions in one package—it provides a nearly seamless way for the user to move from application to application with a minimum of commands.

The key to Framework's smooth integration is its use of an outline as the underlying structure for the entire program. Whether you're working on multiple projects, organizing files or jumping from spreadsheet to word processor and back, everything in Framework stems from an outline.

For example, if you're writing a business plan for a new company or venture, you begin by calling up a blank outline. Then you start filling in subject headings such as Marketing Plan, Cash Flow or Personnel. Highlight one of these headings, hit a key and the screen opens up to form what Ashton-Tate calls a "frame," which is similar to the "windows" used in other integrated software packages.

If you want to make notes or write a chapter of the business plan, simply enter the word processing mode with two keystrokes and begin typing. When you decide to leave the word processor and start working with the financial data, simply close the frame with a few keystrokes, highlight another heading from the outline, open it and start building your spreadsheet. All the functions share the same commands. For example, Copy and Move not only shift text in the word processor, but move figures around in a spreadsheet. The Undo command is available in the

spreadsheet and data base manager as well as in the word processor. This common command structure, combined with the unifying concept of the outline, make using Framework a smooth and logical experience.

But integration aside, this kind of program is only as good as the sum of its parts. Even the most sophisticated level of integration will not persuade users to abandon their favorite programs for an integrated package with weak components. With Framework however, the components stand on their own.

Framework's spreadsheet is powerful even by conventional standards. It seems to calculate and recalculate about as fast as Lotus 1-2-3. More important for the average user, you can move around the

spreadsheet easily and quickly. Some movement commands seem better than 1-2-3's, some not quite as good, but this is minor. For example, there is no equivalent to 1-2-3's GOTO command (the command which lets you go immediately to one particular cell simply by naming the cell and pressing a function key). Also, there's no provision for freezing titles within a spreadsheet or splitting a window in half to scroll through and compare different sections of a single spreadsheet. But because of the ability to link spreadsheets through the outline structure, you will probably use more small spreadsheets rather than a single large one. Unusual capabilities include the ability to use boldface and italics to accent entries—in fact, full word processing capability is available within the spreadsheet. The program not only handles macros (programmed strings of keystrokes which can be activated by one key) but will store them separately so they can be called up and used on different spreadsheets.

Word processing with Framework is a pleasure. Paragraphs can be individually formatted, movement through

documents is rapid, and separate documents can be viewed simultaneously.

The data base manager may be the sleeper of the three major functions in Framework. Many people may buy Framework for its integrated spreadsheeting and word processing, then fall in love with the data base manager. Although less powerful than a full-fledged relational data base, it is easy to learn and operate and has enough power to be truly useful. It not only allows you to sort, but can filter, or extract categories of entries, and you can perform the same kind of search and replace operations offered in a word processing program.

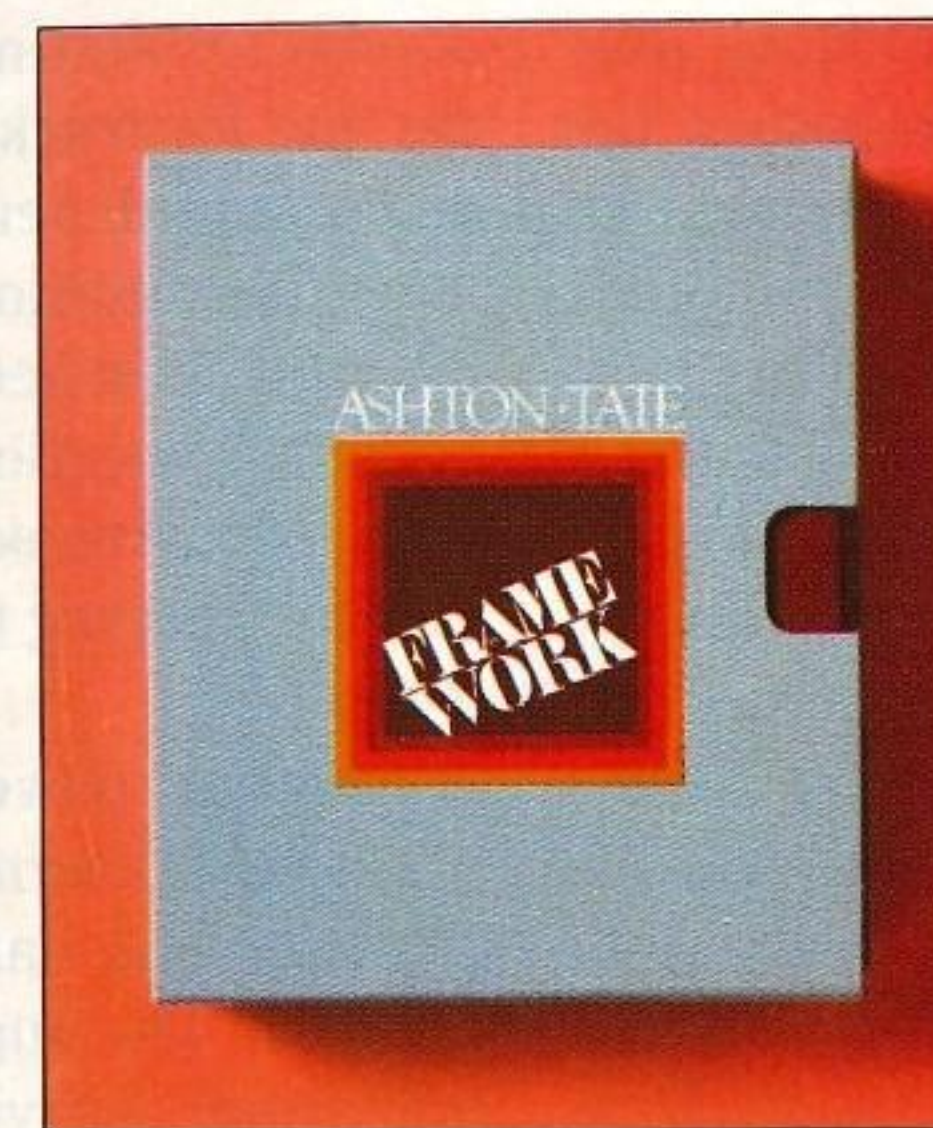
Our review copy did not yet have the program overlays, nor the data compression necessary to squeeze Framework and useful sized data files into the 256k Ashton-Tate claims it will run on at introduction. There were also several bugs that the company is still in the process of removing before commercial release. The documentation was also in a preliminary state. But even with these limitations, the program was surprisingly powerful.

One major flaw, however, is the lack of an intrinsic mail-merge feature. But Framework's developers at Forefront, an independent company now affiliated with Ashton-Tate, have released a compatible high-level language called "Fred," and this combined with the macro capability of Framework, should give rise to a variety of third-party products that will enhance the program. These could range from templates for utilities such as mail-merge, to high-powered programs tailored for vertical markets. One template already planned by Forefront will allow you to open a frame into PC-DOS, call up a communications program, and automatically dial a utility and load information into Framework's spreadsheet.

If this third-party momentum builds, Framework will not only be a powerful product to use today, but a rich working environment that will grow with you to meet your future needs.

—James E. Fawcette

For more information circle 103 on the reader's service card.



Keeping Projects On Target

■ **MICROSOFT PROJECT** runs on IBM Personal Computer and compatibles; \$250; retail; Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98004; (206) 828-8080.

Project scheduling is a task that was once the exclusive domain of the professional scheduler in major corporations and government agencies. Now, thanks to software programs like Microsoft Project, it is rapidly becoming a management skill available to anyone who has a personal computer. Microsoft Project helps with coordinating activities, allocating resources, determining costs and monitoring progress on projects involving hundreds of people or just one.

Project is not to be confused with a time management program; it is a great deal more

than an electronic calendar. Microsoft officials claim that Project belongs to a new genre of software—they call it "project management" software—that will be as important a category as spreadsheets, data base managers and other productivity tools. Just as spreadsheet programs allow non-accountants to do various types of financial analysis based on what-if hypotheses, so does Microsoft Project permit the non-scheduler to rearrange a project to examine various time and money trade-offs.

Microsoft has attempted to present this program in a format which will be as familiar as possible for spreadsheet users, and certainly those familiar with Multiplan commands will find much they already know well. Microsoft Project is a fundamentally different type of application, however—the user will need to recognize that what he is using is more than a spreadsheet with a calendar added to it.

Project is unquestionably a powerful tool, perhaps even too powerful for some people. Someone who is not a full-time manager might be served just as well by a simpler time manager pro-

gram. But for anyone who needs to track a number of activities all related to a single overall result, Microsoft Project will make a lot of sense.

With Project, a schedule is built by first breaking the overall operation into a list of discrete activities which must take place in order to complete the whole project. The activities can be listed in any order. Then more information is specified: how long each activity

will take, required resources, starting date and predecessors (an activity which must be completed for another to begin). The program then constructs a "Gantt chart," a graphic representation of how the activities relate to each other chronologically. This includes a "critical path" of activities which Microsoft Project delineates by distinguishing those operations whose delay would push back completion of the whole project.

After all the activities for a project are entered, the Gantt chart shows sets of horizontal lines underneath a time scale, which can be varied to show days, weeks or months depending on how broad or close up a view of the project is required. Bold solid lines represent the critical path, while lighter lines indicate activities which are less crucial. Such activities will usually be followed by a line of dots indicating slack time into which the activity could be re-scheduled without affecting the overall project's deadline. While the Gantt chart may often display the obvious, it will sometimes reveal a few surprises and possibly suggest ways in which a project's schedule could be improved.

Project can be used in other ways, such as to experiment with a schedule and to predict the impact of such experiments. A manager who is thinking of hiring extra help for a project, for example, can find out how much time would be saved by additional personnel—and how much more money the project would cost as a result. Microsoft

Project is even helpful to use projects that have an existing schedule that works fine and requires no revision. In such cases, the program can be used as a progress monitor with convenient checkpoints to help track the project. If a problem does arise, it can be spotted quickly and the program can be used to evaluate alternative solutions.

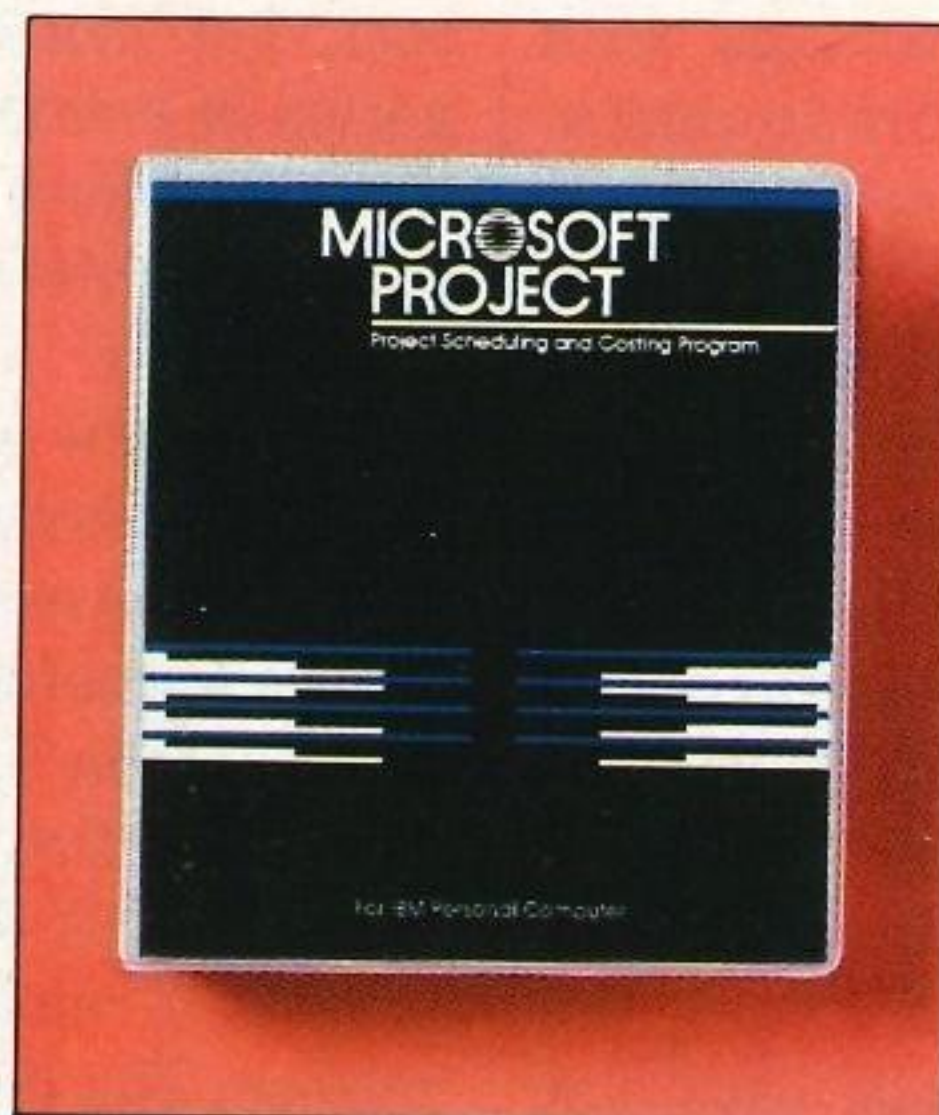
Features of Project include two additional screens besides the main activity screen for setting up the project calendar and for tracking resources. The calendar screen permits the user to designate the duration of the project while letting the schedule take into account holidays, vacations, or weekend work. The resources screen provides the scheduler with keeping track of the costs of the project.

Another powerful part of the program is its Xternal command which lets the user link data from one project to another. The supporting file acts as a single file manager, but who don't necessarily need the esoteric functions of a complex, high-end product. Still, its capacity is respectable: 2000 characters per record (with a maximum of 999 characters per field). The number of records per data base is limited by the capacity of your disk. Please is completely menu-driven. You don't need to program the package to learn a complex language as is the case with some language-oriented data management packages to Multiplan case with some language-oriented data other programs supporting the Sybase (dBASE II or Metafile). The bolic Link (SYLK) file format.

Microsoft has taken the file transfer self-explanatory—"create a data base" capabilities of its new product even one step further by including a file conversion program called CONVERT. To create a file, you follow the steps outlined in the menu—create a data base, add to it—and enter the data. You can also add to or change an existing data base or query it in two different ways: with a "quick list," which lists the records containing the data you're looking for, or by writing an output plan, that is, a format for your report.

Project is in general easy to understand and use. The manual does a good job of running the user through the fundamentals of working in the program, and help screens provide simple context assistance when needed. It is an important step in providing management with a new type of productivity tool.

—Edward Foster



A Pleasing Data Base Manager

■ **PLEASE** runs on IBM Personal Computer, XT and compatibles; \$349; retail; Hayes Microcomputer Products, Inc., 5923 Peachtree Industrial Blvd., Norcross, GA 30092; (404) 449-8791.

"It's very easy to use." How many times have you heard that one? In the case of Please, however, a new data base manager from Hayes Microcomputer, the statement is close to the truth. Please gets you up and running almost immediately with easy-to-follow menus and instructions for creating, maintaining and manipulating your data base.

Please is aimed at managers and business people who want more than a simple file manager, but who don't necessarily need the esoteric functions of a complex, high-end product. Still, its capacity is respectable: 2000 characters per record (with a maximum of 999 characters per field). The number of records per data base is limited by the capacity of your disk.

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The scanning feature of the program lets you extract particular data from the records and display it on the screen. For example, you could pick out all the people on your payroll with an income in excess of \$1000 per week. Set the scan function to the field you want to search, set the test (in this case it would be "G" for greater than), set the value you want

the test cases to exceed (\$1000), then press either F1 to scan in descending order or F2 to scan in ascending order. Please searches for a match quickly, showing the key field (one per record) as it scans the data base.

If you want to add to the data base (in the form you originally set up), you press F2 and add the data to the record. You can easily change a record. Simply find the record you want by scanning the records one by one or searching for the key fields. Then tell the program which field you want to change. The cursor appears at the desired field and you fill in the new information.

If you need help in any of these operations, you can press F10 for a help message at the bottom of the screen. Unfortunately, the help messages are

not always complete. For instance, the help message for the scan test (for searching a data base) reads "enter the scan test (E=equal, L=less, etc./NE=not equal, NL=not less, etc.). There is no real explanation of other options available to you such as B,C,S,T or F. To find out what those mean, you have to consult the documentation.

The editing features are somewhat limited. It would be helpful to be able to move the cursor anywhere you want on the screen to edit the field entries. This is impossible with Please, though you can move back through the record and change an entry—but not one letter at a time. You have to re-enter the entire field.

There's another problem with Please: If you design a custom input screen, you cannot make modifications to the record structure without destroying the input screen format. You have to create another from scratch. In fact, the only way you can make a change in the format of the record, such as adding another field (e.g., an alternate phone number prompt) is to recreate the data base structure (by copying it), then adding the prompt and merging the second data

base with the first. Also, you must work with one data base at a time—you can not draw information from two different ones to make a third, at least not without going through several involved merge commands.

The program can do calculations (add, subtract, multiply, and divide), a useful feature for any data base program. For instance, if you need to know the tax on sales receipts, you can set the program up to total the sales and then multiply the total for the tax due. And, possibly because it is from a company known for its modems, it allows you to make a call from a number listed on the screen, so long as your computer is equipped with a modem. You merely select the number you want from, say, an address list, and press a function key to activate the dialing process. Once the connection is made, you pick up the phone and start talking.

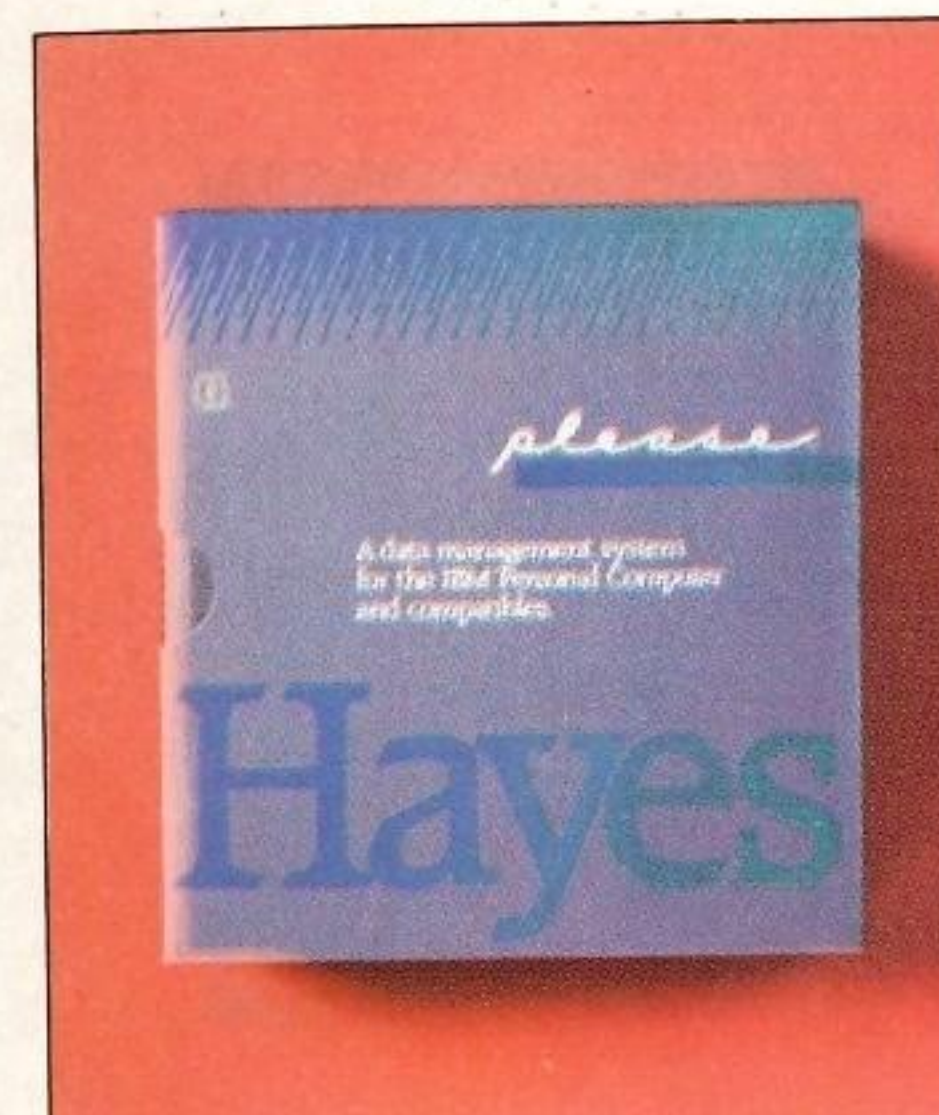
Please also allows you to incorporate some data-checking functions into the program. You can put an upper limit on the amount of an entry and limit the number of digits that can be entered in a field—useful for listing internal phone extensions or nine digit ZIP codes. You can export and import data to and from other programs, such as spreadsheets (including VisiCalc and Lotus 1-2-3), other data base software.

You can also create "export" files for word processing packages such as WordStar. With a list of names and addresses, this works fine. But because the data is written without labels, more complex data may be confusing. You may get a list of numbers with no reference to what they mean.

Please is indeed an easy-to-use program which is immediately understandable, even to novice users. It can be a useful tool for jobs that require massaging a data base, such as mailing lists, but it can also keep track of employee records, membership rosters, appointment calendars and other more complex tasks. This it does quickly, without the need for a lot of time-consuming learning and, if used infrequently, relearning.

—Charles A. Miller

For more information circle 104 on the reader's service card.



MicroPro announces the great Apple® CP/M® board giveaway.



Get a FREE StarCard CP/M Board worth \$375 when you buy MicroPro's Wordstar®, WordStar Professional™ or InfoStar.™

MicroPro's determined to make every Apple a Star. So now when you buy our best selling WordStar, WordStar Professional or InfoStar for your Apple II, II+ or IIe computer, we'll give you a free StarCard® CP/M board worth \$375.

StarCard lets you take full advantage of the advanced, yet easy-to-use features of MicroPro software. WordStar is the world's most popular word processing program. The WordStar Professional is WordStar plus MailMerge®, StarIndex™ and SpellStar®. And InfoStar is MicroPro's advanced, yet easy-to-use "information processor." For sorting and reporting inventory, mailing lists, prospects and more.

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other CP/M based programs at a processing speed significantly higher than that of Apple programs.

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- 6 MHz Z-80B microprocessor • 64K of RAM
- CP/M Operating System, Version 2.2

STARCARD™ 

TOP 20/PERFORMANCE

Accounting Made Simple

RAGS TO RICHES runs on IBM Personal Computer, PCjr; MS-DOS 2.1; \$99.95 (per module); retail; Chang Labs, 5300 Stevens Creek Blvd., Suite 200, San Jose, CA 95129; (408) 246-8020.

Since its introduction in late 1983, the IBM PCjr has been an anomaly. Even its parental IBM officials admit that "junior" has not performed as well as had been expected in the marketplace. Of course, what IBM calls "below expectations" is enough to keep many smaller corporations ringing up profits. Still, by most accounts, the PCjr has been less than spectacular.

A great part of that lack of performance has been blamed on the PCjr's identity crisis. Is it a home machine or a business machine? Or both?

Nothing can provide such character definition as software programming can. To date, there has only been a trickle of programs authored specifically for PCjr. Now a new one, Rags to Riches, aims at what middle ground may or may not exist between the home user and the office professional. Chang Labs' strategy seems chock full of cautious wisdom. However, the potential user may view it as simply too unfocused to pay close attention.

Chang Labs hopes its Rags to Riches accounting program will make the PCjr a bridge from the small business operated out of the home to a small retail store. The program is geared to very limited applications such as a child's lemonade stand or a very small (less than 10-employee) business. The question remains, however, whether businesses that small are motivated to use a computer, even with software as elementary as Rags to Riches. Chang Labs, however, is betting that only applications packages that are tailored to make the best of the PCjr's limitations—like Rags to Riches—will motivate long stagnant PCjr sales.

Rags to Riches does not pretend to

offer the personal computer user the sophisticated accounting power of packages from Peachtree, BPI or other makers of professional accounting software. Rags to Riches will never balance the books at Exxon or General Motors—or even Chang Labs. This 32k program is strictly for the "Mom and Pop" storefront on Main St., U.S.A. Therein lies its limitation—as well as its strength.

The program's limitations are strictly physical. In order to keep the program within 360k disk capacity of the single-drive PCjr, there is room to store only a few records. If one record appropriates 300k there's obviously very little room for a second record. Because a good deal of the screen (nearly one-half) is taken up by an extremely friendly user interface you can

see only one-quarter of each record.

If there is such a thing as being too user-friendly, Rags to Riches is it. There are three levels of help to the program: learn, show and expert. A function key serves as a toggle between the help levels. However, the only apparent distinction between the learn and show mode is that the help information in the show mode flashes across the top of the screen in the fashion of a Times Square marquee. The same information remains steadily at the bottom half of the screen in the learn mode. The marquee help can be extremely distracting to someone who is attempting to do any serious concentration with the program.

In addition to the on-screen help, the manual is written in very elementary style. So elementary, in fact, that the reader is given a course in accounting fundamentals as well as elementary computer use. The manual's glossary explains words like assets, liabilities, audit trail and even accounting.

One of the key advantages to Rags to Riches is that it is contained within 32k making it well-suited for the single-drive system while also improving per-

formance. The 32k program fits well within the basic 64k RAM of the PCjr, allowing the program to run entirely in RAM—making it faster than disk-dependent accounting programs. It also means that the entire program can be stored in RAM while a data disk takes up the PCjr's only disk drive.

Unfortunately, what makes it appealing to the novice is likely to turn off the expert. Rags to Riches has traded advanced features like record searching for a simple accounting program. It is quite likely that Rags to Riches will find its home with users who need a program more sophisticated than a checkbook balancer but don't need the power of a more professional accounting program. Unfortunately, there is no upward mobility within the Rags to Riches program that takes the user from a balanced checkbook to a balanced corporate ledger.

However, since each module (general ledger, accounts payable, accounts receivable and sales) in the Rags to Riches series sells for \$99, it may well be considered cost-effective for the small businessman who uses it not on the PCjr as it is, but on the IBM Personal Computer or its compatibles. By using it with the Personal Computer, the small businessman can use Rags to Riches as a learning tool toward a more sophisticated package. If a small businessman were to buy a PCjr for the purpose of using Rags to Riches, he would find himself in difficulty when his business outgrows his hardware. At \$1395, the PCjr system is not quite as disposable as Rags to Riches.

As a result, despite Chang Labs' predictions to the contrary, Rags to Riches is not likely to singlehandedly increase sales of the PCjr any more than adding color and bells and whistles will improve the looks of any business' balance sheet. The program is well-suited for a one-man operation—no more. It's not designed for the businessman who expects his company to expand in the near future. Very simply, his needs will quickly outgrow Rags to Riches.

—Robert A. Sehr

For more information circle 105 on the reader's service card.

Data Base Interaction

■ **R:BASE CLOUT** runs on PC-DOS, MS-DOS, CTOS, BTOS and Unix based systems; \$195; retail; Microrim, Inc., 1750 112th Ave. N.E., Bellevue, WA 98004; (206) 453-6017.

R:base Clout, from Microrim, is billed as an "artificial-intelligence," natural-language query system to be used exclusively with the company's popular R:base program. This description sounds like something out of the movie "2001: A Space Odyssey," but its meaning is quite simple: The user can ask questions in simple English, the same as if talking to an assistant. Subsequently, Clout will query the R:base data base for the answer.

Now here is a truly helpful program. To be able to sidestep "computerese" commands can be a boon to the productivity-conscious professional. It means that heavy research can be simplified and thus be of more immediate help to decision-makers. In situations where more than one person will be using the data base, Clout's flexibility really shows up. Being able to call upon data with general terminology also eases the burden on infrequent data base users. Clout has a forgiving, almost understanding—if you will—side to it.

The hard part of using Clout is "configuring" it. This configuration process is almost a matter of establishing a personal relationship, by teaching Clout the kind of terminology you will be using in the data base. The terminology is created by the same person who generates the data base. However, once taught, the program does not forget its cues. It responds the same way every time, with every user.

The process begins with a "conversation" between Clout and the user, according to Microrim. The user queries the computer with a word or a series of words not already in the data base vocabulary. Clout responds with questions that serve to define the unfamiliar

terms—in effect, to teach it the user's language. If the data base was to include a field of data entitled "jobs," for instance, a definition could be constructed for "occupation" or "work." In this way, Clout would be taught that each means the same thing. All three words would be interchangeable when a data base is queried about jobs.

Clout starts out with its own 200-word built-in dictionary. Words like "show," "list," "what" and "who"—standard request words—are included. And upon installation, the program will read the attributes in the existing data base and add them to the dictionary. Clout's dictionary can continue to be built upon with synonyms for words or operations associated with the data base. The program consults its internal dictionary to interpret a request, searches the data base being worked in, and then responds with an answer in several different formats.

If a user is not familiar with a particular data base, yet knows that it contains needed information, a review of the data base's fields—or relations, as Microrim calls them—shows exactly what kinds of questions can be asked to get the information. This is where Clout shows its ability to allow colleagues to share a data base, therefore gaining access to information not previously available. Of course, Clout can't make a decision; it can provide information contained in a data base, and a data base can supply information, not the reasons behind the information.

To begin a search for information, Clout can be asked to do tasks that are as simple as, "Show me a list of employees and when they were hired." After a few seconds of sorting and searching, Clout will comply. By the way, while the program is searching the data base a "speedometer" will appear on the screen that indicates the program's progress. This means a lot to users who are not used to the time it takes for data

bases to find requested information.

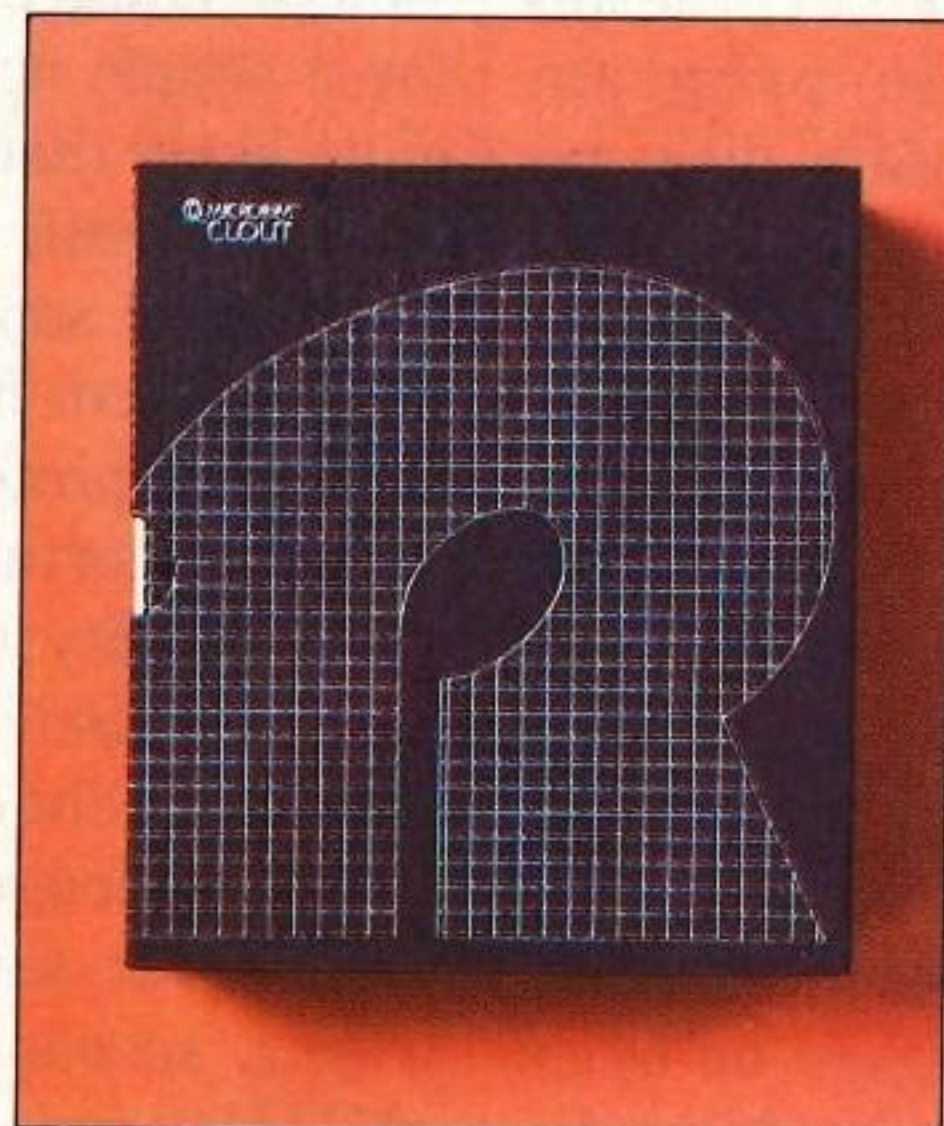
During the search, Clout is kept track of the current and active questions, as well as any previous questions. These are displayed at the top of the screen. This feature allows questions to be refined and enhanced instead of having to be repeated.

The tutorial contained on the Clout disk shows most of the program's significant features in the simplest and fastest way possible. The documentation is similarly excellent, affording a step-by-step explanation of the program's operation that is the equivalent of a written test drive. By the way, there is no need to consult the documentation for everything. Hitting the question mark key, or simply typing "help" will produce assistance anywhere in the Clout program, ranging from information pertaining to a particular place in the program, the data base schema, detailed explanation of the functions of Clout, or even a view of the program's internal vocabulary.

Clout chooses the format to get the much information on one screen as possible—in tables or as a list. And Clout is capable of computations—adding, subtracting, multiplying, dividing, totaling and summing, making mathematical correlations, averaging and computing standard deviation. If the program does not understand a question, for example, if the word "companies" is misspelled as "campanies," Clout will ask for more information. In this case, the program is unable to guess the correctly spelled word because "campanies" has four different letters than the word "company." So Clout asks for a synonym or that the spelling be changed.

Certainly Clout is limited by the fact that it must be used with R:base. No other data base will do, even though another may be more extensive than the one Microrim provides. But to dwell on its limitations is to ignore the very important advance that Clout represents in executive productivity. The most important aspect of this product is that after it is "taught" a vocabulary, it is very easy to use. As such, it is a step forward in the way people interact with a data base.

—Elli Holmdahl



Lending Punch To Graphics

■ **MICROSOFT CHART** runs on IBM Personal Computer and compatibles, Apple Macintosh; \$250 (IBM), \$125 (Macintosh); retail or direct order; Microsoft Corp., 10700 Northrup Way, Bellevue, WA 98004; (206) 828-8080.

Business people have long recognized the value of graphics. Pie charts and bar graphs have helped to do everything from selling a new product to raising venture capital to mollifying a board of directors.

But it wasn't until the debut of integrated programs, led by Lotus' 1-2-3, that the use of graphics by personal computer owners truly blossomed. Suddenly the ability to turn spreadsheet data into a graph was only a few keystrokes away. Charts and graphs started to fill business plans and proposals, which helped in shaping slide presentations.

Yet, after the initial rush of enthusiasm, many experienced users suffer a letdown. The more they use computer graphics software, the more sophisticated their needs and demands become. This user—the individual who clearly knows the point he or she is trying to make with business graphics and who needs more effective tools to do so—can turn to Microsoft Chart, one of the new dedicated graphics programs.

Chart is an elegant example of software that combines two attributes that so frequently seem to be mutually exclusive—power and ease of use. Chart's utility comes from a combination of features. There are over 40 predefined graph types that can be easily toggled between with a few keystrokes or clicks of a mouse. Defaults simplify and speed data entry, yet can be easily changed or overridden, and context-sensitive menus guide you through producing graphs that work.

Pick a type of chart—pie, column, bar, area, line or combination graphs—from the gallery of predefined formats and a window opens on-screen showing

a variety of options. Select one and the data is quickly turned into a graph of that style. Add legends, labels, alter the data, then pick another predefined graph. The data is displayed, complete with all the refinements. Switch to a logarithmic scale, or, if none of the formats is quite right, turn to a palette of background patterns and segment-shading patterns and customize the graph you are working on.

The result is that users are freed from much of the drudgery of defining graphs and freed to tailor their graphs to be effective communications tools. If a column graph of store sales seems confusing, try normalizing the X-axis against the break-even point. Then the graph shows when each store is making or losing money. Add a label "Fall

sale" with an arrow indicating a profitable surge—and the graph makes a utilitarian point that would have been lost in a conventional bar graph. Similarly, Chart allows the user to jump back and forth between accenting patterns or shift from area charts to pie charts. Chart encourages users to start experimenting, fine tuning and, ultimately, improving their ability to communicate.

Chart comes in two different versions, one for the IBM Personal Computer and compatibles, the second for the Apple Macintosh. Although each has essentially the same genetic background, the behavior of each is clearly shaped by its environment. Chart's version for the IBM Personal Computer will look familiar to anyone who has used Microsoft's Multiplan spreadsheet or Word, the mouse-based word processor.

Chart on the Mac makes a distinct first impression. First, the sharp gray image on the Macintosh screen creates a contrast that gives the graphs a visual "pop." Then, instead of the Personal Computer's command lines you see Mac's pull-down menus. Like all of Microsoft's products for the Mac, Chart

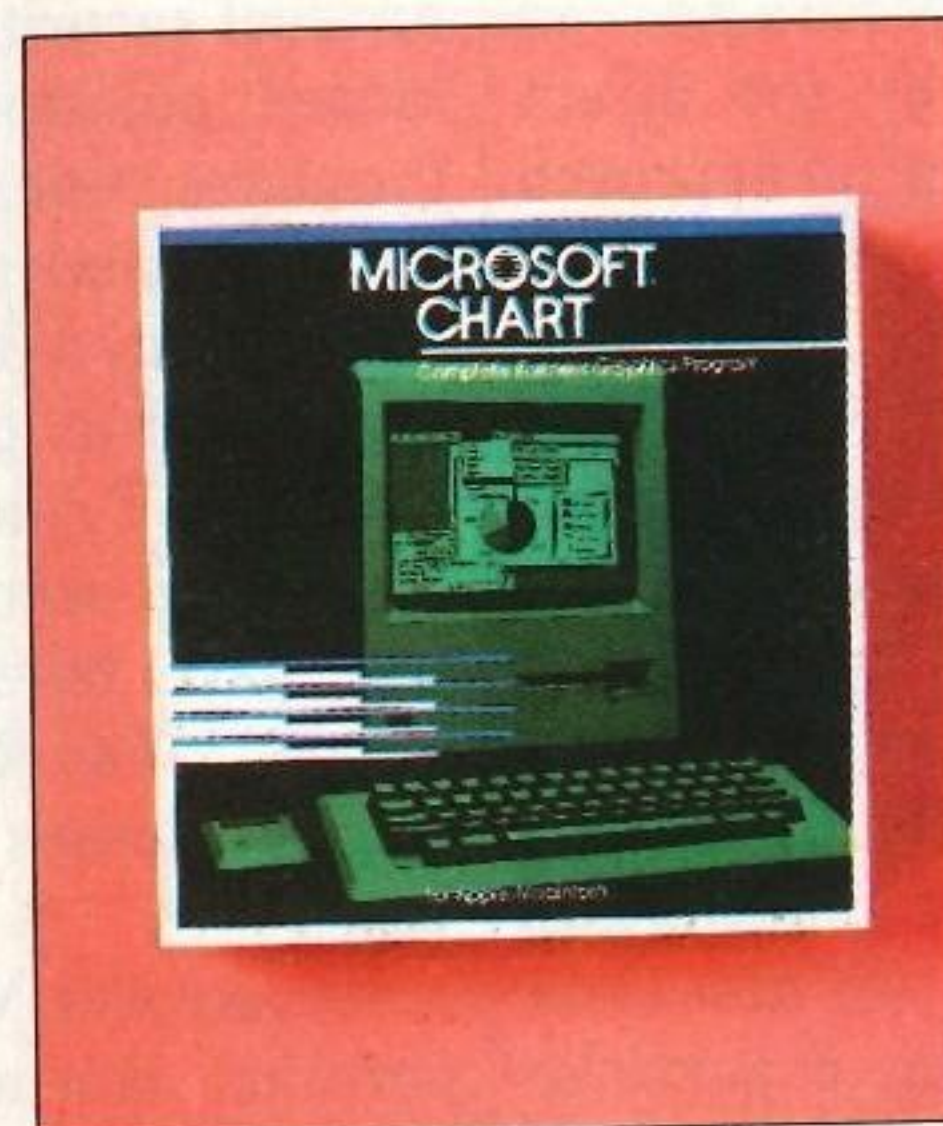
does an excellent job of using Mac's user-interface tools. For instance, unlike many products that have been quickly and incompletely transformed, Chart uses the clipboard, so graphs can be created in Chart, saved to the clipboard, and then inserted in the middle of a document produced with Microsoft Word. And the "elevator," an icon for scrolling through documents, is available within the data entry window for scrolling through tables.

For each advantage you gain in the Macintosh version, however, there are sacrifices when compared to the IBM Personal Computer variant. For instance, Chart for the Personal Computer can not only display color graphs, but can produce color output with a wide variety of plotters and printers. Mac's Chart is limited to black and white on and off screen. In fact, the only printer you can use so far is the Apple ImageWriter, a medium-quality dot-matrix printer. Eventually, both Macintosh and future versions of Chart will support other output devices.

Also, Chart will present up to 16 graphs at once on the IBM Personal Computer, more than anyone could seemingly ever comprehend or use simultaneously. Chart on Macintosh is limited to showing two graphs at once, presumably because of Macintosh's limited, unexpandable 128k of RAM memory. Similarly, the IBM version offers some additional choices in predefined graphs.

In either version, Chart is a powerful tool for the serious graphics user, readily accepting data transferred from spreadsheet programs or keyed in, and quickly turning it into effective graphs. The question that potential users need consider is whether their needs truly demand Chart's superior graphics capabilities and justify the additional cost. For someone who does nothing but straight pie or bar charts, and already owns an integrated program such as 1-2-3 or SuperCalc3, Chart is superfluous. But for anyone who ever longed for logarithmic scales, slick area charts or simply for more flexibility, Chart may well be the easiest program yet for turning out business graphics.

—James A. Fawcette



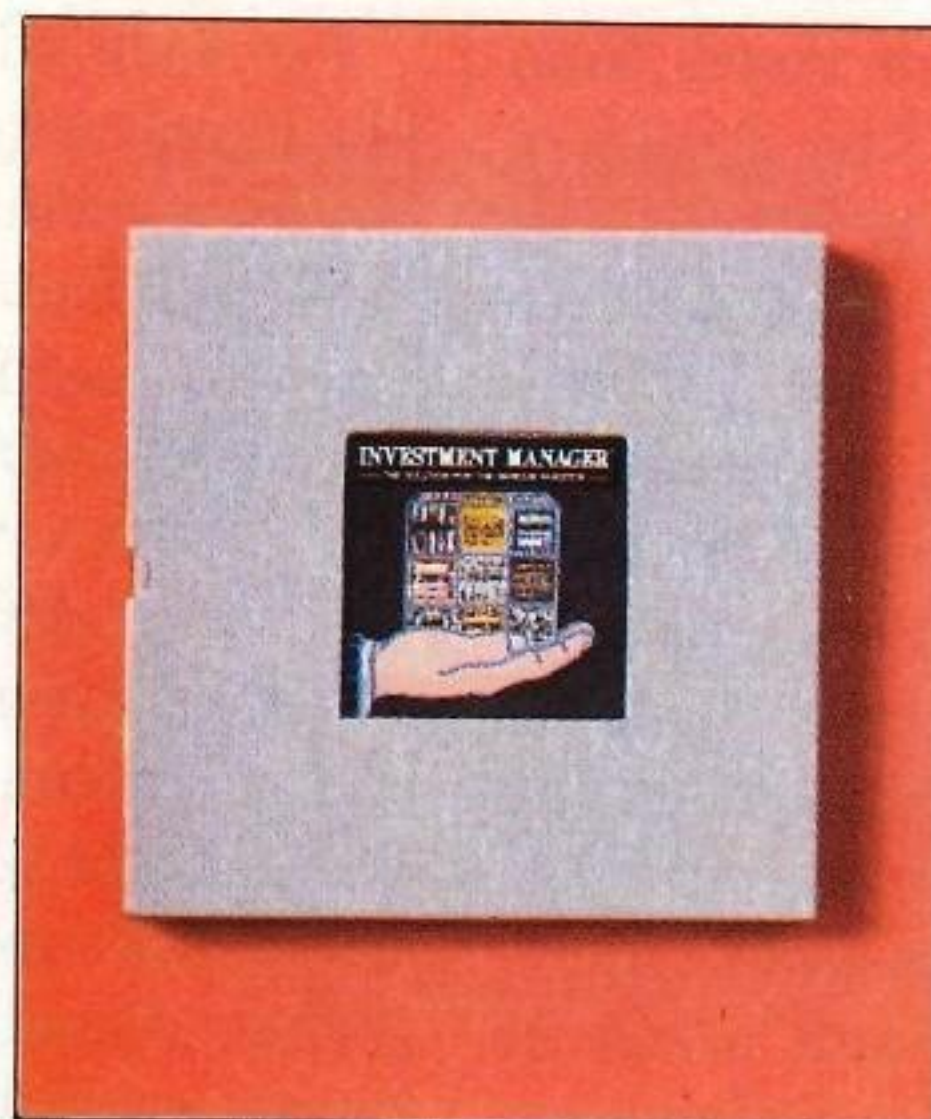
Portfolio Management

INVESTMENT MANAGER runs on the IBM Personal Computer and other MS-DOS machines such as Compaq, DEC Rainbow, Wang PC, NEC APC, NCR Decisionmate V with 128k RAM and two disk drives; versions also available for C/PM-80 systems with 48k RAM; \$275; retail or direct order. International Microcomputer Software Inc.; 633 Fifth Ave, San Rafael, CA. 94901. (415) 454-7101.

No portfolio management system is complete without a "variant" upon which to calculate investment performance. To sophisticated investors and investment managers, profit and loss results are the stuff of broad overview. What matters for these professional moneymen are the intuitive—some might say divinely inspired—manipulations, predictions and forecasts that make up day-to-day investment strategy and its resulting security transactions.

In this vein, Investment Manager, a new two-disk software package from International Microcomputer Systems, Inc., falls the usual giant-step short of being failsafe. Not that it isn't a professional investment tool of some countenance. In fact, it ranks with the most serious and sophisticated portfolio tools available. All the usable data for individual securities can be listed; transactions recorded, and tax ramifications calculated.

Unlike some investment software packages that serve simply as computer-based lists of individual securities, Investment Manager enables the compilation of detailed accounts for the purchase, sale and running performance of stocks, bonds and other investment vehicles. As for its analysis variant, Investment Manager uses the "beta" measurement and adjustment theory, a ratio indicator designed to quantify a particular security's volatility, or riskiness. What more could a serious investor ask for?



A little less presumptuousness, perhaps. While the designers, the Walton Group, of Boston, Mass., had every good intention of producing a comprehensive and sophisticated program, they have carried this to a questionable extreme. The result is a software program that borders on being unwieldy and overbearing for any but the most active, full-time portfolio manager. And even this select class of potential users

may find that Investment Manager is faulted by too direct and literal an approach to an uncertain science. Portfolio management requires flexibility to deal with the uncertainties that are the only hard and fast realities of the investment world. No investment manager worthy of his title would run a portfolio based on any one analysis theory, let alone the beta value theory. Without judging the relative merits of beta theory, it is certainly of use as only one of a handful of similar tools.

The supplier makes a point of touting the beta feature in Investment Manager. Yet, the program's documentation immediately tells those unfamiliar with this indicator that they can ignore it. This done, some of the program's investment tracking techniques can be appreciated. For example, Investment Manager has a fine, index-card-type method of inserting portfolio information security by security. The program has the capacity for up to 1000 individual security positions on a disk and is easy to update with each additional portfolio purchase.

However, Investment Manager is not the simplest program to move through. For example, one can sometimes—but not always—back up to a previous screen. Usually, it takes a journey through at least one submenu, and in some cases a trip back to the program's main menu, to go from one program segment to another. Considering that the program offers multiple

functions, this maneuvering may be a fair price to pay.

Written or on-screen reports of investment performance are the heart of Investment Manager. There are five types of reports for each of the numerous portfolios that the program is able to handle. The Inventory Report lists each security, its cost, dividends and any gains or losses that have been accrued. The Security Performance Report focuses on gains and losses of individual securities in both the open and closed position. The Portfolio Performance report is where some of the more sophisticated analysis is handled, such as rates of return, long and short-term capital gains and beta performance. A Transaction Report is simply a running account of all transactions that have taken place in a portfolio. Finally, a Tax Report will generate lists of gains, losses and income on a year basis.

Investment Manager also allows the portfolio data to be converted to data interchange format so that it can be plugged into spreadsheet programs for further investment analysis. There is virtually no end to the numbers that can be run with the MS-DOS and PC-DOS version of Investment Manager. Thanks to a built-in communication program, this version can be linked with either the Dow Jones News Retrieval service or the Warner Computer Systems Financial Database to get automatic quote updates on any security in the stored portfolios.

There is little doubt that Investment Manager can help professional investment managers bring order to major financial holdings. However, it is questionable whether the program lives up to its ambitious billing as an analysis tool that will enable investors to "wonder no more." Professionals will recognize that for all its risk-and-return measurement power, Investment Manager is not the breakthrough that has the one key that portfolio management continually seeks: a sure-fire way to pick stocks.

—Fred Abatemarco

For more information circle 106 on the reader's service card.

A Friend Indeed

FRIENDLYWRITER/FRIENDLYSPELLER runs on the IBM Personal Computer and compatibles; \$89.95; retail or direct order; FriendlySoft, Inc., 638 W. Pioneer Pkwy., Arlington, TX 76013; (817) 277-9378.

Into a world of word processing already full of various "friendlies," "easies" and so on, comes a program for under \$100 that claims it will put you into the professional league, at least as far as your correspondence goes.

"Can you prepare a printed letter, free of spelling errors, with justified margins, underlined words or sentences for emphasis, and a choice of page sizes from 5 by 7 to 8½ by 14 in the next 10 minutes or so?" That's the first question of a "test" challenging you to pit your conventional writing methods against FriendlySoft's FriendlyWriter for the IBM Personal Computer.

Like any marketing claim, this one has to be put into perspective. Yes, the user who has invested the time necessary to learn all the features and commands of FriendlyWriter could probably meet the challenge. But so could an old-fashioned stenographer. A more pertinent question is, "Does the time spent learning commands and procedures and slogging through documentation pay off in features and flexibility?" In this case, it does.

FriendlyWriter is a full-featured word processor that combines writing and editing features with a heavy emphasis on the surrounding tasks of file maintenance, formatting and printing. In fact, the first half of the documentation is devoted to physical parameters, such as margins and page lengths. Writing and editing features aren't dealt with until page 47 of the 100-page manual. Whether this is good or bad is a matter of personal preference. In any event, this is the orientation of the package.

The formatting features are indeed extensive. Page size, left and right margins, justification, number of lines per

page, characters per inch, and line spacing can all be set to meet your requirements. Best of all, letters can be reformatted before they are saved, without calling up a separate menu.

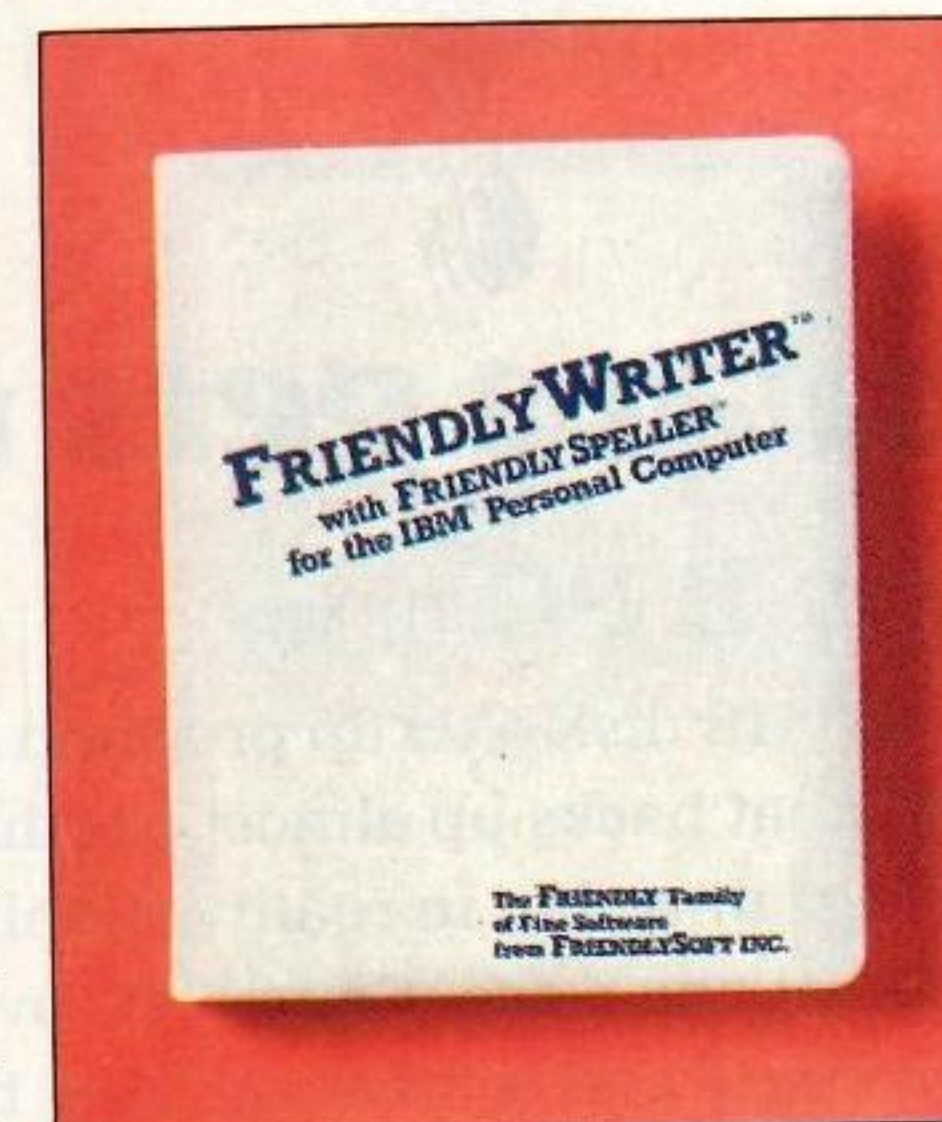
Editing functions include the standard move, delete and search, although there's no search and replace feature. The program supports underlining, and there is a copying feature which will reproduce a line or block of text at another part of the document without deleting it from its original position.

Cursor movement is controlled from the numeric keypad on the left side of the keyboard, while editing functions are activated by the function keys on the right side. This leaves the alpha keyboard free for typing, a welcome improvement over programs which

use a combination of alpha keys and control keys to execute editing functions. The command line at the top of the screen shows the status of each function key and changes in response to the functions in use. Hitting a function key to carry out an action, (delete, copy, move) causes a subset of functions to replace the functions on the command line. Although the purpose of many of the function keys must necessarily change (there are only 10 keys, and many more functions,) there is an attempt at consistency: F10 generally carries out a function, the escape key cancels it.

Within this logical structure, one inconsistency blares forth: The "insert" function requires you to use the tab key to insert space between words. This means you must pause, hit the tab key, add your text, delete the extra space, or, if you've underestimated the space you need, hit the tab key for more. While you can get into an insert mode by hitting the insert key, remaining in this mode for a time means putting up with a delay between striking a key and seeing the letter on the screen.

FriendlyWriter's attention to the non-writing tasks of word processing is



particularly evident in its file maintenance. The disk catalog, or directory, includes not only the names of files and the date they were created, but a 25-word descriptive pulled from the file. To choose the descriptive label, you simply mark the text before saving the file. The documentation suggests marking the "Re: . . ." line on memos, which will work fine if all your documents are memos or letters. If not, you can choose any group of words which will jog your memory when they show up on the directory. You can also use these descriptors to perform a search of the directory. If, for example, you want to know how many of your letters to customers deal with delinquent accounts, simply specify "delinquent accounts" and the directory will list only those letters whose descriptives contain the words "delinquent accounts." These are innovative and useful additions to the standard method of maintaining files.

The documentation is thorough but not particularly well organized. The importance of reading through any manual is a given, but so is the tendency to skip over sections and jump right into the program. Many software developers recognize this and provide quick reference pages or cards. This package could benefit from such an approach.

FriendlyWriter comes bundled with FriendlySpeller, a spell checker contained on a separate disk. When activated from the edit menu, the spell checker marks all words which don't appear in its 70,000-word dictionary and suggests alternate spellings for each. You can either select one of the alternates or, if the word is not in the dictionary you can add it to the dictionary, which has space for 45,000 entries.

Whether or not you'll ever produce a perfect letter in 10 minutes depends more on you than it does on FriendlyWriter. The important thing is that the program does provide the tools for electronic writing, editing, formatting and printing—logically arranged and easily accessible. At \$89.95, that should spark some interest.

—Nora Georgas

For more information circle 107 on the reader's service card.

The Real Dinosaurs

DINOSAURS runs on Apple II series; IBM Personal Computer, PCjr; Commodore 64; \$39.95, \$34.95 (Commodore 64); retail; Advanced Ideas, Inc., 2550 Ninth St., Suite 104, Berkeley, CA 94710; (415) 526-9100.

Developing software for very young children involves some unique problems. First, there's the short attention span of toddlers. They need a lot of stimulation in order to stay interested.

Color, movement and variety are prime considerations. And, to be really useful, a program should have some educational value.

Dinosaurs addresses these needs with vivid colors, engaging graphics, and playful tunes designed to hold a toddler's attention while developing his matching, sorting, memory and pattern

recognition skills. The five games included on the disk are based on Montessori principles of early childhood education and are aimed at children ages 2 to 5.

Dinosaurs has some innovative features geared to the needs of young children. Menu choices are depicted in pictures, and the youngster uses arrow keys to move a "bouncing ball" to the picture that represents the game he wants to play. This kind of care extends to the command structure; only five keys on the entire keyboard elicit any kind of response from the program: escape, return, left and right arrows, and "s." The child can bang away on the rest of the keys as much as he likes—including delete and reset—without threat of disaster. The screen image will remain static. Movement is very general, a plus for young children who have not yet developed complete hand-eye coordination.

Advanced Ideas has a strong commitment to producing software that encourages learning in a positive environment. In Dinosaurs, correct answers are always rewarded, while incorrect answers are simply ignored. If the child

tries to make a wrong match, he won't be greeted with a beep, buzz, or error message; there will simply be no feedback. After a correct answer, dinosaurs perform energetic little dances to musical accompaniment. When the whole game is completed—usually after about five correct answers—there's an even more entertaining reward: a dinosaur parade. As a tune plays in the background, a group of brightly colored

brontosaurus, ichthyosaurus, triceratops, stegosaurus, tyrannosaurus rex and pterodactyl dinosaurs skip across the screen. The documentation claims that the very movement of the dinosaurs builds prereading skills. "Dinosaurs move from left to right on the screen. Since that is the direction in which your child will

later learn to read and write, the activities reinforce prereading skills."

The first game teaches simple matching skills. There are five different types of dinosaurs on the top of the screen. As a dinosaur appears on the bottom of the screen, the child matches it with a creature at the top. A correct answer causes the pair of dinosaurs to dance together.

In the second game, the child sorts the dinosaurs into two groups: carnivores, or meat-eaters, are placed by a pile of bones, while the plant-eating herbivores belong beside a group of flowers. When a dinosaur is placed correctly, it gives a quick "chomp chomp" to its meal and rewards the player with a song.

In the third game, the child places the dinosaur in its proper living environment—sky, water or land. If the match is correct, the dinosaur will fly, swim or crawl. The fourth game teaches pre-counting skills. One or more dinosaurs of the same type will appear in boxes at the top of the screen. For each dinosaur, the child must make a match with its counterpart from the bottom of the screen.

The fifth game teaches pattern and

letter recognition. There are five dinosaurs at the top of the screen; a dinosaur name is below. The child uses the arrow keys to move the bouncing ball to the dinosaur whose name is on-screen. At a correct answer, the name will move down to the bottom of the screen, and the animal will follow.

The program anticipates a child's almost inexhaustible capacity for repetition by assuming "play again" as a default value. Once a child has finished a game and watched the parade, the program doesn't go back to the main menu, and it doesn't wait for the player to press return. It simply starts up again, automatically, bringing more of the engaging dinosaurs onto the screen.

Dinosaurs also makes the competitive aspect of most games a moot point. You won't have to worry about your 3-year-old feeling defeated by your 4-year-old. Dinosaurs can only be played against the computer, not against another child. And there is no scoring in the games, so a child never loses.

A color monitor isn't necessary to run Dinosaurs—Advanced Ideas has carefully designed the different scenes with textures to differentiate sky from land, and land from water. But a color monitor is still a plus. The vibrant colors are attention grabbers.

The brief documentation comes in a bright yellow package with a lot of extras, including a reference card for quick start-up, a coloring book of dinosaurs with descriptions of each animal, a glossary of dinosaur terms, and a bibliography of dinosaur books for further study. There are also a few suggestions for educational activities kids can try, such as making "fossils" or creating a dinosaur puppet.

In all, this program is a good value for the money. The variety of the games and their different levels make Dinosaurs a program with staying power. It offers education and fun at the same time. And the games prove what cartoon fans have known for years: A well-made product for children can be just as much fun for adults.

—Lynn Walker

For more information circle 108 on the reader's service card.

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WildCard 2 (Apple II, II Plus, IIe)

Designed by us and produced by Eastside Software, WildCard 2 is the easiest-to-use, most reliable card available. Making backups of your total load software can be as easy as pressing the button, inserting a blank disk and hitting the return key twice. WildCard 2 copies 48K, 64K and 128K software, and, unlike other cards, is always ready to go. No preloading software into the card or special, preformatted diskettes are required. Your backups can be run with or without the card in place and can be transferred to hard disks. \$139.95 complete.

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A Creative Development Tool Does Your Child Measure Up?

■ FACT AND FICTION TOOL KIT runs on Apple IIc, IIe with extended 80-column card; \$39.95; retail; Scholastic, Inc., 730 Broadway, New York, NY 10003; (212) 505-3000.

Perhaps more than anything else, children need experimental tools to help them reach their full potential of creative self-expression. Fact and Fiction Tool Kit from Scholastic, Inc., is a new two-disk program that has the makings of just such a tool.

Aimed at children ages 8 and older, this package enables a child to make up stories, illustrate them with pictures, and then edit, print and read the final product. One disk in the package, the Story Maker, has essentially a combination graphics and word processing program on one side. (On the opposite side, this disk contains a previously issued program called Secret Filer, which is essentially an elementary data base.) The other disk in the set contains the "picture gallery" on one side—a data file containing dozens of complete and partial images for use with Story Maker—and formatted space for 12 pages of stories on the opposite side.

Whether a struggling child or a seasoned professional, the first discovery that any writer makes is that a blank page is the toughest obstacle to overcome. Story Maker gives a child the kind of non-threatening encouragement needed to overcome this initial hurdle and begin writing. First, symbols at the bottom of the screen let the child choose a function: write, draw, go to the gallery, erase, or change pages. The symbols, or icons, make sense visually and therefore should be easy for a child to understand.

A mouse or joystick controls cursor movement to an icon, and then the mouse is clicked or the joystick's fire button is fired to make a selection. I tried both joystick and mouse with this program. In all its uses, I found that the mouse provided much better control with Story Maker.

A child who doesn't know how to start

a story does not have to conjure up words immediately. I looked at the picture gallery first, and let the pictures suggest a story.

Typing the words to make up a story is only part of what this program is about. Another element is decidedly illustrative, letting children choose pictures from the gallery and draw their own.

Pictures from the gallery portray characters such as a motorcycle rider, a jester, a witch, and a ghost, as well as various animals, plants and trees.

When you click the mouse for the picture you want and take it back to the story screen, there is a choice of two sizes. The large size is much too large for all but a title page, since most large pictures take up

at least half of the vertical space of the screen. However, the smaller size can be used to add a picture to the body of most stories.

The gallery also has landscapes of sand and sky, which are useful for making background scenes. Various patterns and shapes are also available in the gallery. With time and patience, an advanced user can develop some interesting scenic pages to go with a story.

It's fairly easy to go from text to the gallery and back again, especially with a mouse, and a child will probably adapt quickly to the technique of moving between the two functions.

The drawing mode, however, is limited in its utility and not at all easy to control. Any kind of detail is all but impossible to achieve. Scholastic says students who tested the program used the draw feature mostly for extra background etchings, such as mountain ranges.

Erasing also requires skill and patience to get exactly the effect desired. As with drawing, there are two erasure strokes, thin and thick, that can be used to erase text as well as graphics.

With the paging option, a child can

advance a page, backtrack or, if completely unsatisfied with the existing work, clear the screen and start over. The previous page is automatically saved when the page is advanced.

The program generally has a lot of room for trial and error experimentation. It's better than drawing and writing on a blank piece of paper in that computer graphics provide a polished finished appearance for a child's imaginative combinations.

One of the most enjoyable features of the write mode is selection of typeface. There are eight styles to choose from and they can be mixed in combination.

While in text mode, the backspace cursor key will erase unwanted letters—even those on the previous line. This enables the user to employ the backspace key to quickly erase a word that does not fit on a line.

Primarily designed for use with the Apple IIc, Story Maker takes advantage of the machine's double high resolution graphics capabilities to create intricate illustrations. The built-in, side disk drive on the IIc also minimizes the annoyance created by the program's biggest drawback: flipping disks. You have to flip disks constantly with Story Maker to get to and from program, gallery and story files. The IIc's drive is conveniently located and the door of the drive is easy to operate.

A slim booklet is included with the package as its documentation. It's necessary to digest everything in the booklet before booting. Story Maker can be used right out of the box with the manual serving as a standby reference.

The program will print out on two printers: an Imagewriter, and the new Scribe, designed for use with the IIc. With the Imagewriter, printouts are limited to black and white; the Scribe can produce color.

Fact and Fiction Tool Kit seems like a good addition for any cache of child development tools. It encourages a sense of play in creative expression, a necessary ingredient often missing in the traditional classroom environment.

—John King

For more information circle 109 on the reader's service card.

■ CHILDSPACE runs on Commodore 64; \$39.95; retail or direct order; Computertose Inc., 2012 East Randol Mill Road, Suite 223, Arlington, TX 76011; (817) 277-9153.

Now that you've balanced your checkbook, mapped out your financial future, mastered BASIC programming and zapped a few aliens in the interim, what else can you do with your Commodore 64? Well, you could use it to measure the progress of your child.

Is your child an underachiever or an overachiever? Is he one of the nation's best and brightest or does he exhibit a potential for developmental problems? Childspace from Computertose Inc. is being marketed as a software program that can help tip you off. It's a tall order, obviously,

to measure any individual's total potential—at any age—by simple comparison to any kind of standard. Parents should view any process, including personal computer software, as an aid, not a final authority.

Childspace—which is being introduced on the Commodore 64 and will ultimately run on the Atari 800, IBM Personal Computer, PCjr and Apple II—is targeted at parents of children from five to 60 months of age, and offers a way of comparing their progress to that of a control group of youngsters.

The process is based on a series of psychological tests developed by two University of Colorado Medical School child psychologists 17 years ago, and which are now in general use nationwide. Administered by professionals

under clinical conditions, the tests are capable of providing insights into child development. Whether similar results can ever be expected from a computer used in the home is still an unanswered question, however, since Childspace brings little more than cosmetic enhancement to the testing process without providing for its use under professional, standard conditions.

The program's results are determined from questions in four basic categories: general movement, which measures the basic body movements; detailed movement, which measures coordination; language, which measures communication skills; and personal/social habits, which measures the child's interaction with the people around him.

The software comes complete with its own set of props. In addition to the manual and diskette, Computertose provides 8 small blocks, a piece of cellophane, a piece of wool and a small plastic bottle for different phases of the test. Through the use of these props, plus some other tests such as drawing pictures, the child is measured against other children in the same age group

as either having performed up-to-age, above-age or behind schedule. The props are used in tests which measure coordination skills and ability to follow instructions.

The program's 27-page manual shows some typical pictures against which the parent can measure the child's artistic work, indicating both passing and failing drawings. The manual also gives a list of acceptable responses for definitions of certain words. The manual is designed to be an adjunct to the on-screen tutorial rather than an independent guide to the program.

General movement questions range from measuring how well a baby sits up by itself to how well a child catches a ball. Detailed movement questions measure such things as how an infant's eyes follow the movement of his parent or how well a child draws figures. Language questions range from the kind of noises a baby makes to attract attention to the ability of the infant to define words.

The problem with many of these tests in the unprofessional atmosphere of the home is that in most cases they are too subjective. They can depend too

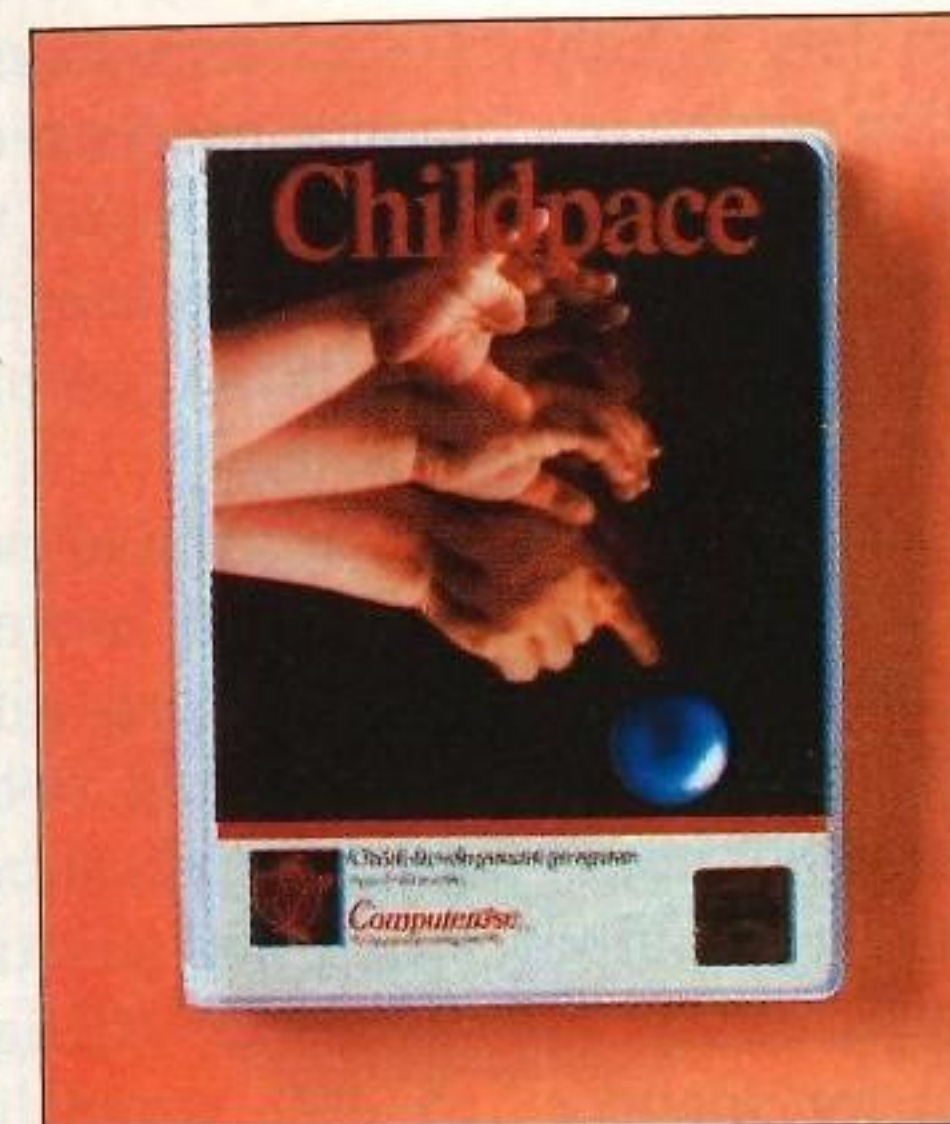
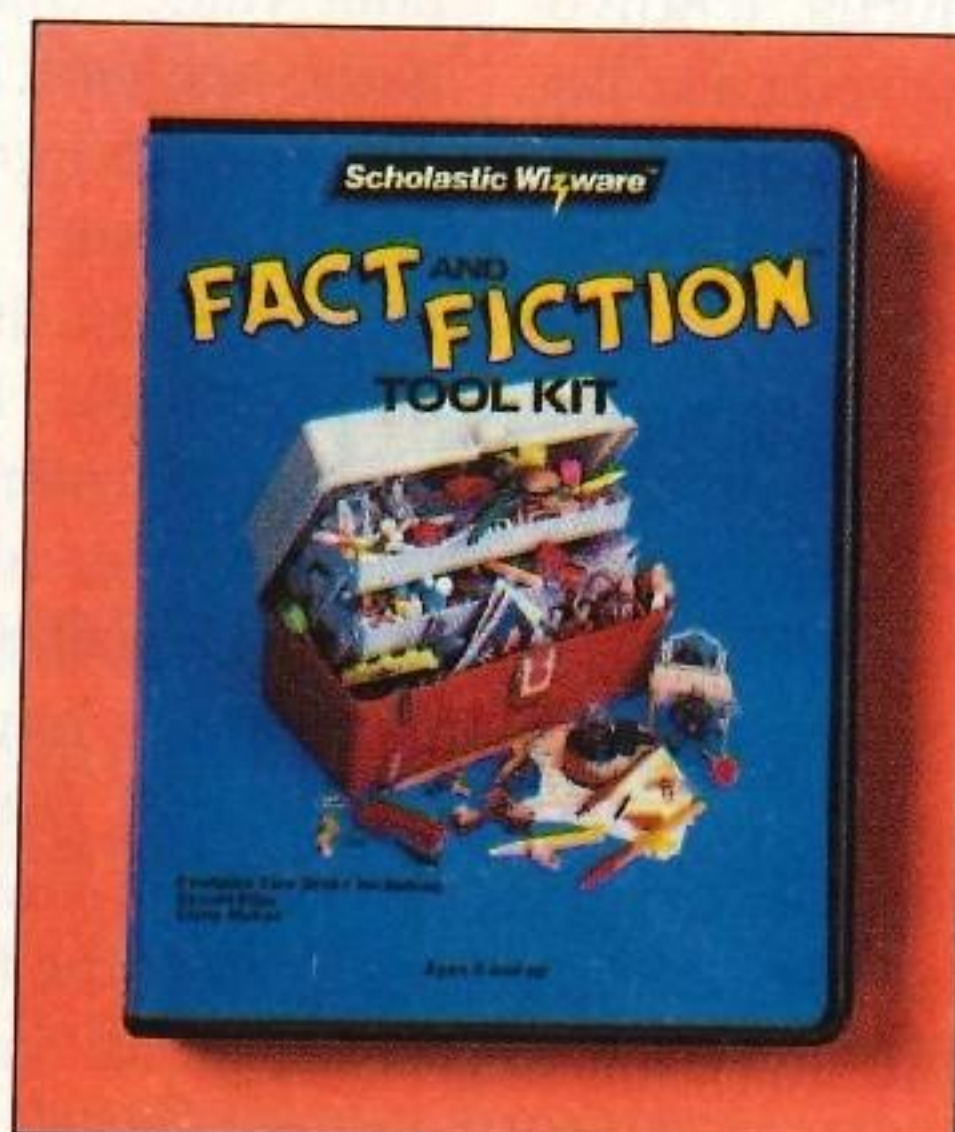
much on the amount of distraction within the room where the test takes place, the general disposition of the child and his interest in taking the test. Although the user is warned to create the least distracting environment possible, it is unlikely that the test will be performed under laboratory conditions.

Childspace's developers warn at the outset that the possibility for errors in such a test is very great and that professional help should be sought to make a positive determination of any developmental disability. The manual even lists a large number of professional resources—ranging from pediatricians and school nurses to university psychology clinics and community health services. The developers say that Childspace is meant only to reinforce a parent's belief or concern that a child may or may not be progressing at a proper pace.

Unfortunately, however, such a warning may go unheeded in some of today's households where a package such as Childspace could be perceived as an inexpensive substitute for a professional evaluation. In its Commodore 64 incarnation, however, most informed parents will realize that it doesn't even come close to that objective. The same questions that are flashed on the television screen could just as well be presented in the form of a workbook or even a Sunday newspaper magazine supplement—without the electronic gadgetry. The computer itself really adds little to the questionnaire that could not be achieved with pencil and paper. The developers claim a more "personalized" approach. But this turns out to be nothing more than a mail-merge function which puts the child's name and age within stock answers. There is, in fact, no more personal detail in the results than in a well-designed printed form. It is probable, however, that some parents—caught in the glitter of electronics and the pretty bar charts that are "personalized" with the results—may give these results more weight than they deserve.

—Robert Sehr

For more information circle 110 on the reader's service card.



Learning From Turtles

■ **CYBERLOGO TURTLE** runs on Apple II, IIe and III; \$55; retail or direct order; Reston Publishing Co., Inc., 11480 Sunset Hills Rd., Reston, VA 22090; (703) 437-8900.

Getting children interested in serious computer programming is a daunting prospect. It is hard enough to convince an adult of the rewards of learning to program, let alone an 8-year-old whose involvement with computers extends only to blowing up aliens in video games. The trick is to hold the child's attention with a stimulating activity that "feels" more like entertainment than formal learning, one that rewards creativity while instilling basic principles that develop particular skills.

CyberLogo Turtle from Reston Publishing is designed to do exactly that. The package is an introduction to computer programming (ages 8 and up) and is based on Logo, the computer language created for children by educator Seymour Papert. The device used to "disguise" the educational purpose of the package is "turtle graphics," a system which encourages kids to make designs on the computer screen by entering a series of instructions that determines the movements of a triangular cursor known as a "turtle."

Using simple English commands (forward, right, left), the child programs the turtle to move around the screen, trailing a drawn line behind it. With concentration and proper planning, the child can program designs of varying complexity, from simple squares and circles to complicated Spirograph-like geometric patterns.

As the child "programs" the turtle to create designs on the screen, he is learning principles which can become the solid foundation for computer programming. He learns problem-solving skills (what instructions does the computer need to make lines meet, or to make the sides of a square even?), the importance of precise instructions (the

only ones which elicit a response) and the value of planning (it's no good to simply plunge into a design; a plan must be made before the actual drawing starts). The planning required to design even the simplest shape on the screen requires discipline and concentration.

CyberLogo Turtle is easy to use and requires only that the child know the difference between left and right and be able to type instructions into the computer. The program also has a help mode which can be activated at any stage in the program.

The program comprises two main parts—playground and school. The initial playground segment provides an introduction to the operation of the computer and an opportunity to get a feel for moving the turtle around the screen before settling down to plan and program designs.

In the school portion of the program, the child begins to link individual commands to form a program. The child can save programs created in the school segment of the package and reload them at any time, which means he doesn't have to write an entire program in one sitting. This seems a particularly necessary concession to a typical youngster's attention span.

Documentation for the program comes in the form of a 130-page manual which offers a complete introduction not only to turtle graphics, but to computers in general. The manual is clearly written with legitimate computer terms (e.g. computer, programming, input, output, command) appearing in boldface type as they are introduced. Rather than present concepts in a dry, straightforward manner which would quickly bore children, the ideas and principles are interwoven with practical instructions for using the program. By the time he reaches the second page of the manual, the child will already have booted the program and begun to explore the playground segment. Editing and cur-

sor control commands are set apart the page in boxes for easy reading, and each chapter ends with a boxed review of the concepts covered in the preceding pages.

The main part of the manual is divided into 10 chapters, or "turtle steps" designed to guide the child through the learning process, from simple programming to advanced projects that use color and sound. Again, these chapters are clearly written and liberally illustrated with diagrams and program commands presented in large type. Illustrations provide the child with a convenient reference showing what the design he's creating on the screen should look like.

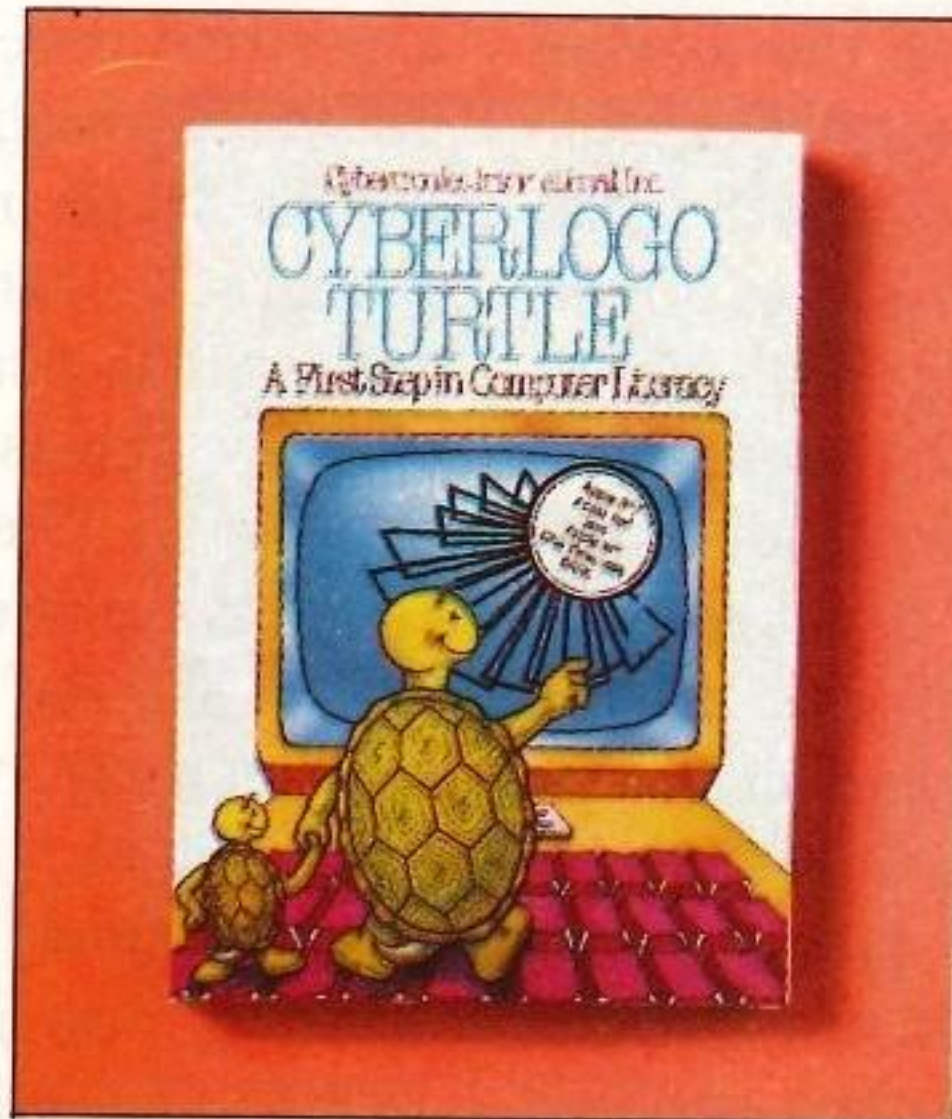
The school section of the program introduces more complex editing commands, along with instructions for loading, running, debugging and saving programs. Subsequent chapters cover deleting and printing functions and commands for filling shapes with color. Chapter seven, the concept of subroutines is introduced in the guise of "Supercybers," which the manual explains can be planned, or serendipitous. (This unusual phrase is defined in the text.)

X and Y coordinates, variables and techniques for adding sound to programs are all presented logically, progressively building to the last section of the manual—advanced graphics and programming techniques. By the time the child gets this far (remember, programs can be saved, so the learning process can be tailored to the child's own pace), he will have progressed far beyond squares and circles and should be creating "compositions," no less.

This program is a fine way to introduce kids to computers and computer programming. Parents could also benefit from some time spent with the turtle, and they may in fact want to acquaint themselves with the program, even only to save face. After all, when you'd better be ready.

—James Keogh

For more information circle 111 on the reader's service card.



Help For Novices

■ **PC EXPERT** runs on IBM Personal Computer, XT, and other compatible systems; \$139.95 (or the programs may be purchased separately: \$69.95 for Training for the IBM Personal Computer with PC-DOS, \$69.95 for Training for the IBM-PC DOS 2.0 and \$39.95 for PC-DOS Director); retail; Cdex Corp., 5050 El Camino Real, Suite 200, Los Altos, CA 94022; (800) 82-1213, (415) 964-7600.

Learning to use a personal computer can be an unsettling experience. Not only is there a hodgepodge of hardware and software to figure out how to use, but there's also an arcane language, complete with RAMs, ROMs, bits and bytes, to be deciphered.

The people at Cdex Corp. didn't think first-time users should be intimidated or frus-

trated in their learning efforts. That's why they introduced PC Expert, a package designed to help computer neophytes understand and use the IBM Personal Computer and its PC-DOS operating system.

The package consists of three programs, two of which are training courses, the other a system utility. The first program, Training for the IBM PC with PC-DOS, covers the features and functions of personal computers, particularly the IBM Personal Computer, and of the DOS operating system (versions 1.1 and 2.0). Brief introductions to programming languages (BASIC, Pascal, C) and to other operating systems (CP/M, UCSD system, and Unix) are included.

The other course, Training for the IBM PC with DOS 2.0, includes almost everything you ever wanted to know about 2.0, including how to prepare and copy disks, how to create batch files, and how to use the tree-structured directories that version 2.0 can produce. Although some of this information is also presented in the first program, the complexity of such operating system commands as "path" and "tree" makes

the more thorough explanations in the second course most welcome.

Both training programs use questions and exercises to test understanding. If you can't come up with the right response, even after a few helpful hints, don't worry—the correct answer and an explanation are always provided (occasionally with a suggestion to review the subject matter). Doing the exercises, found in the printed guides which

accompany the program, is also a very helpful method for reinforcing the on-screen presentation.

The third part of the PC Expert package is a utility program called PC DOS Director. This program is similar to many of the recently released "operating environments" for MS-DOS based machines that provide an interface between the

user and the DOS operating system.

With PC DOS Director, you can issue many of the DOS 2.0 commands (the program handles most, but not all, DOS commands) by answering the program's prompts and following the directions listed on-screen. PC DOS Director translates the information taken from "input menus" into the appropriate DOS command and performs the operation. You needn't be an expert on DOS to use PC DOS Director successfully, but you must be completely familiar with the DOS commands in order to know which one to issue. Help screens are provided but they don't tell you enough about the more complicated commands to enable you to use the program without any prior DOS training. Consequently, the third program in the PC Expert package is of little use to computer neophytes without the two training courses.

That's the catch-22 of PC DOS Director: It is designed to be a workable interface between the operating system and users who don't know much about DOS and yet it requires its users to have a good understanding of DOS to use it. Granted, the two training programs teach you almost all you need to

know about your Personal Computer and its operating system to use PC DOS Director. But if you're going to spend the time it takes to learn about DOS from the training programs (Cdex says three hours, but 12 hours is more realistic), then you might as well learn to use the operating system itself. The real DOS has more to offer than the interface program and, in some cases (such as when you are calling up a disk directory or erasing a file) it is easier to use.

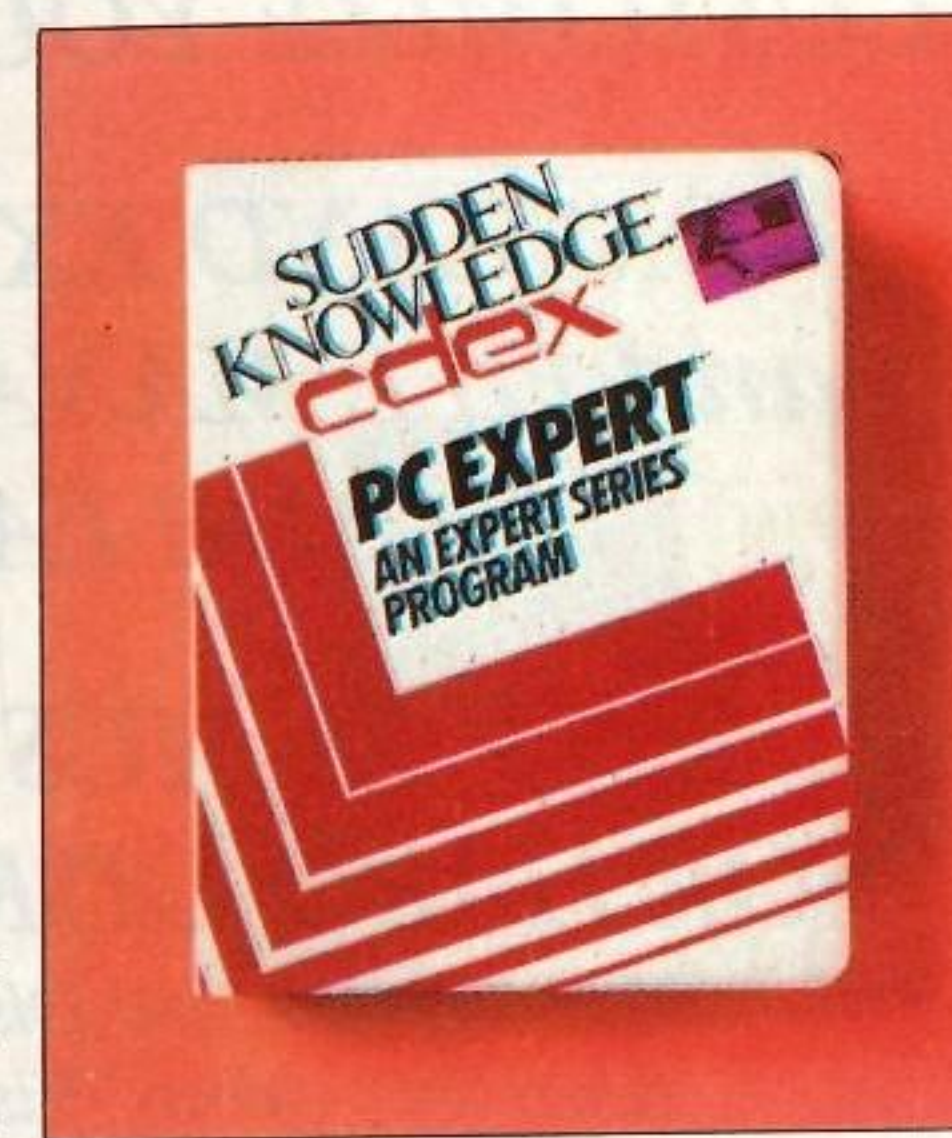
PC Expert also has some other flaws. When a question section in one of the training courses reveals your weakness in a particular area, for instance, it gives you the chance to review that material. It would seem logical that if you selected that option the program would take you to the appropriate section for review. Well, it does not.

Equally frustrating is the utility program's use of the plus or page-down keys in place of the return key. After spending many hours pressing the return key in the training programs, it is confusing to switch to these other keys in PC DOS Director. In fact, having to do so goes against the almost instinctive "press the return key" response that every personal computer user comes to have. To make matters worse, some Cdex designer made the unforgivable mistake of assigning the function "erase" to the original return key.

Despite such problems PC Expert still has a lot to offer to novice IBM Personal Computer users as a learning tool, but not as an operating system interface. An incredible amount of information is presented in the two training courses in a concise and straightforward manner. If only PC DOS Director were as useful. A program that's designed to help computer novices use DOS shouldn't require that you learn DOS to use it. That is just plain ridiculous. The people at Cdex could have saved a lot of time and money if they had included merely the two training courses in the PC Expert package. They're all you really need.

—Lisa B. Stahr

For more information circle 112 on the reader's service card.



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"The Wonder"

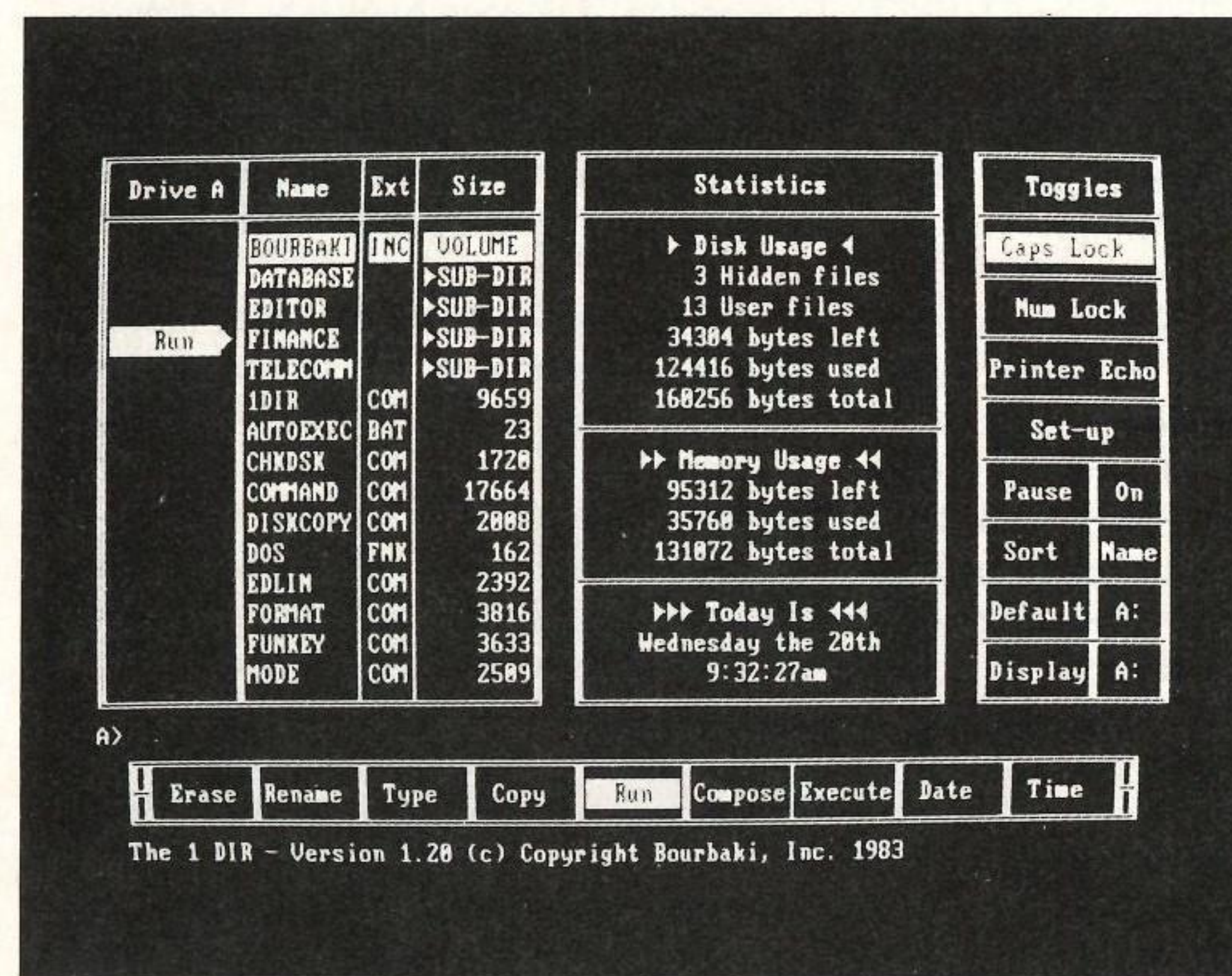
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Easy Drawing With A Mouse

MOUSEPAINT/APPLEMOUSE II
runs on Apple II series with ProDOS,
extended 80-column card and mouse;
100 (IIC with built-in interface), \$150
I, II Plus, IIe with interface addi-
tional; retail: Apple Computer, Inc.,
9525 Mariani Ave., Cupertino, CA
95014; (408) 996-1010.

Take MacPaint, the remarkable
drawing program for Apple's Mac-
intosh, cram it into an Apple II machine,
add a mouse, and the
result is MousePaint, a
rend-setting compro-
mise of the Apple II's
year-old design and
the cost-effective
technique of computer
drawing with a mouse.

Essentially, Mouse-
Paint and its hardware
the AppleMouse II in-
put device itself and an
interface board if
needed) let you draw
and design mono-
chrome images up to
the limits of the Apple II's "hi-res"
screen resolution. MousePaint retains
about 75 percent of MacPaint's capabil-
ities with a considerable cost savings. A
MousePaint/AppleMouse II system
costs about half as much as a
MacPaint/Macintosh system.

With MousePaint artists and non-
artists alike can produce everything
from exploded parts diagrams (one
comes on the program disk) to impres-
sionistic landscape renderings. You can
save images on disk, use the saved im-
ages with most other Apple graphics
programs, print images and insert them
into reports, articles and the like by
using a good photocopier to "print" the
MousePaint picture onto a document.
MousePaint produces somewhat grainy
images, but these can be reduced (via
photocopier) until they appear rather
sharp. By itself, MousePaint only pro-
duces images covering half of an 8½ by
11 sheet of paper. It runs on a color
monitor, but you'll still get monochro-
matic printed copy output.

MousePaint offers real possibilities
for productive use. Many times profes-
sionals write a thousand words because
they don't feel skilled enough to make

one drawing that would communicate
their idea more effectively. MousePaint
lets you make that drawing more easily
than writing those one thousand words.
MousePaint has major educational
value, too. Virtually anyone from ages 5
and up can use MousePaint as a tool
that simultaneously teaches computer
graphics and artistic skills. People
whose eyes see better than their hands
can draw will find MousePaint espe-
cially rewarding. Kids are likely to like
MousePaint so much they might even
choose it over arcade-
style games.

Someone who can't
draw a straight line
can produce detailed,
precise drawings
(within MousePaint's
resolution limits).
Business graphics pro-
duced with Mouse-
Paint have more flex-
ibility than dedicated
business graphics programs offer, albe-
it without their automatic figure gener-
ation. Being able to annotate your
graphs with MousePaint's text fonts is
especially helpful. And with the grid op-
tion, the wobbiest hand draws sure
straight lines up and down and side to
side. Since you can isolate any rec-
tangular portion of your image and
move it around the screen, it's possible
to sketch office, home and plant layouts
quickly, then rearrange scaled ele-
ments representing furniture and other
objects. You can also flip and invert
these images, though you can't rotate
them per se.

The MousePaint manual spans 56
pages. It shows how to install the hard-
ware, use the software and program the
AppleMouse with your own BASIC or
Assembly language programs, including
samples of each.

Starting out with MousePaint, there
is an overly user-friendly on-screen tu-
torial. Or, you can go right into the
"working window." Menus across the
top say "File," "Edit," "Aids" and "Font."
Clicking the pointer over these pulls
down submenus that let you do things
like load, save and print pictures, cut,

paste and invert images, choose "brush"
shapes and sizes, select between five
type fonts, view the entire picture or a
tiny portion blown up—and more.
Pointer-selectable "icons" down the left
side let you select things like text
mode, an effective airbrush mode,
endpoints-defined line drawing, an
eraser, a variety of variable-size en-
closed shape generators with or with-
out fill-in patterns. Your 30 pattern
choices show across the bottom. Some
MacPaint functions are missing—
notably automatic image mirroring, ir-
regular region marking-off with the
"lasso," filling in precreated areas with
patterns and integrating images with
MacWrite.

With the right hardware you can run
MousePaint on any Apple II series ma-
chine. Early Apple IIs require a new
ROM chip, and IIs and II Pluses re-
quire an Apple Language card-compati-
ble 16k RAM card to be installed. For
all but the IIC, your AppleMouse II
package includes an interface board you
plug into an expansion slot inside the
Apple. (The interface is built into the
IIC.) To print out images you must have
either the Apple Imagewriter (with Ap-
ple's Super Serial Card or the IIC's
serial port), or the Apple Dot Matrix
Printer and a graphics-capable parallel
board.

MousePaint jams a major portion of
MacPaint's functionality into the con-
fines of an Apple II through a series of
artful compromises. Like MacPaint, it
has very limited printer support. You
can't catalog disk files to get the
names of images you've saved, so you
have to write out the file names by
hand. You also have to keep track of
which of the many combinations of
modes you're in—many operational
states aren't flagged. MousePaint sacri-
fices some user-friendliness for long-
term functionality. But it is still enough
fun for small children to love. Adults,
too, for that matter. Literally hundreds
of programs are being adapted to use
AppleMouse II technology. MousePaint
is just the start.

—Lee Thé

For more information circle 113 on the
reader's service card.

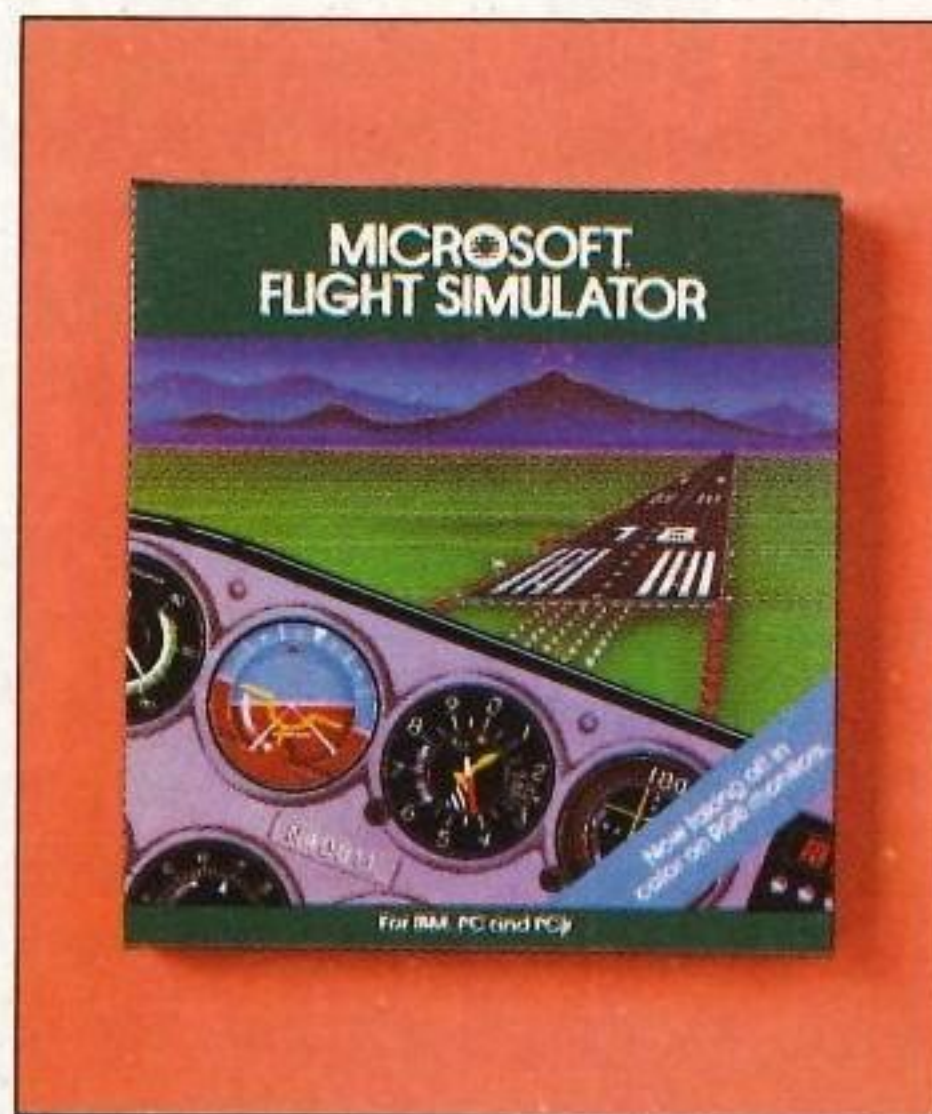
Yonder (i.e., Wild, Blue)

FLIGHT SIMULATOR runs on IBM PCjr (with 128k), IBM Personal Computer; AT&T Personal Computer; other PC-DOS compatibles (color monitor and one joystick are practical requisites); \$50; retail; Microsoft Corp., 10700 Northup Way, Bellevue, WA 98004; (206) 828-8088.

There are two ways to look at the advent of the celebrated Microsoft Flight Simulator for the IBM PCjr: primarily, it broadens the availability of a truly diverting computer experience, but with a color monitor and at least one joystick this package almost becomes a *raison d'être* for the PCjr. Its much maligned keyboard is practically flawless—trust me—as a bank of aircraft cockpit “switches,” including the all important throttle unless you opt for a second joystick (the first being used as the flight control column).

For those who haven't seen it, Flight Simulator puts a full single-engine aircraft instrument panel on the bottom half of the screen; the top is your windshield. On a 128k PCjr the program offers either a four-color (high-resolution) mode or a 16-color mode that is so low-resolution it makes the instruments unreadable, although it somewhat enhances ground objects. Opt for the instruments, because you'll soon suspend your disbelief in the out-the-window graphics.

Flying was a complicated collection of dynamic, but subtle, parameters even for Orville and Wilbur Wright. To find most of them accounted for, in reasonably realistic proportions, on a single floppy diskette is almost enough to engender spontaneous applause. Those of us who have been through real-life flight training recall a series of universal misconceptions: The first is that as soon as the plane leaves the ground, time and space will combine into an enormous blur of raw speed. The second is that any plane will immediately fall out of the sky if you “let go” of the



airplane—even for an instant.

Non-pilots who expect these sensations from Flight Simulator will be initially disappointed because the program is faithful to the real world. In the flight demonstration mode, you simply “arrive” at a comfortable altitude, and you'll soon be sitting there examining your cuticles in lieu of anything more interesting. This is the threshold of exactly the kind of complacency that kills

any number of real-world doctors and dentists in their private planes on Wednesday afternoons, and I give the program A+ for its replication.

In terms of the third critical misconception—that the terra firma which appears so serene from 5000 feet or so will float benignly up to meet you when you land—Flight Simulator and the PCjr get only an A. The exaggerated sensation of speed when closing with the deck is fine; it's real. But the graphics get jumpy when you're at slow approach speeds close to the ground. This frame-flicker makes Flight Simulator harder to line up on a runway and land than the Cessna 182 it emulates.

The expanded flight modes and options available to practiced Flight Simulator pilots are impressive. After a day or so of memorizing the “cockpit” of the PCjr, you can move into a full-reality mode where takeoffs, landings and cruising can be intermixed with weather complications (surface winds, shear zones, turbulence and multiple cloud levels), low visibility, cross-country navigation problems and even engine emergencies. For all this simulation capability, the program's documentation never gets off the ground to the same extent; all the flight modes are covered, but the real pilot's critical pre-flight, takeoff and landing checklists do not exist in any orderly form.

Likewise, the implications of stall speeds, which the novice is sure to encounter early on, as well as what the flying fraternity calls “unusual atti-

tudes,” are sketchily handled, with almost cavalier reference to serious flight publications you can add to your library. It's true that there's more the diskette than most personal computer users will care to explore, with only slightly more comprehensive documentation, the intricacies of the program could be much more readily appreciated by people with no flying background at all.

But this is, after all, something most PCjr users will be operating for fun, not for serious simulation. (The program that it tends to elicit critical mention, Odesta's Chess, has shortcomings in the latter regard as proof of its on-screen effectiveness.)

Up there in the cockpit with your radar option (most useful for ground operations because of the graphic imitations of the program's windshield view while taxiing) that would add a couple of hundred thousand dollars to the cost of a real-world Cessna 182. You can “safely” fly the kind of aerobatic maneuvers—such as an “outside loop” if you're up to it—that would take the wings off the real plane not more than a few seconds into the entry phase. You can even go back to World War II in one flight mode option, for a taste of air-to-air combat (with radar aid, yet). And while flight speeds over programmed terrain (East and West Coasts, Midwestern U.S.) match reality, the time, you can simply enter coordinates to be anywhere on the system's map.

When you crash—and you will—shatter lines appear on the windshield along with, depending on what you've smashed into, a succinct message. The board and a list of moves on the screen of course is the program's most valuable simultaneously is a clear advantage. In come lapse from hard simulation; versions of the program for other computers, the user must toggle between Chicago's Hancock Tower or the Statue of Liberty to see how much “hardness” the program's authors have invested in its discernible landmarks. For the le-

demented, a straight-and-level run between the twin towers of New York's World Trade Center can be considered a sort of graduation exercise. What I'm saying is that it's hard to imagine anyone with a PCjr and a color monitor who wouldn't find Flight Simulator to be essential.

—Robin Nelson

Chess On The Macintosh

SARGON III runs on Apple Macintosh; \$49.95; retail or direct order; Hayden Software Co., 600 Suffolk St., Lowell, MA 01853; (617) 937-0200.

A few minutes with Hayden Software's new version of Sargon III for Apple's Macintosh are convincing: It is clearly the best chess program available for personal computers. What sets it apart from its competition is not so much the strength of its game or the number

of play options it offers—programs such as Odesta's Chess 3.0 and versions of Sargon III for other computers are also strong and versatile enough to challenge novice and master alike—but rather, its ease-of-use. This advantage may be as much a product of the machine it runs on as of the program itself. If so, it illustrates what happens when a

good program is blended with a machine for which it is perfectly suited.

The advantages of Sargon III for the Macintosh become evident immediately. The screen display is divided into two windows. The larger window shows a chessboard with recognizable, clearly drawn chess pieces rather than the crude shapes users of other computers have learned to live with. To the right of the board a second window, initially blank, is used to list moves made by the user and by Sargon. Having both the board and a list of moves on the screen simultaneously is a clear advantage. In versions of the program for other computers, the user must toggle between the list of moves and the board display, a process which could greatly interfere with the concentration of any budding Bobby Fischer.

The Macintosh's mouse control makes moving pieces easy. The cursor is placed on the square where the piece is located, the mouse button is held down to pick up the piece, the mouse is moved until the piece is on a new square, and the mouse button is then released. (The program rejects illegal moves by returning the piece to its original



square.) In contrast, making a simple Pawn-to-King Four opening move with versions of Sargon III for other machines would require typing “E2-E4”. Most other chess games rely on some equally abstract form of notation. Sargon III for the Macintosh acknowledges the way that people really move a chess piece.

These dramatic differences in the playability of Sargon III have not been

achieved at the expense of any of the program's other capabilities. The versions of Sargon III for other machines are as powerful as any chess program on the market, and this new version for the Macintosh retains all their good qualities.

Those qualities start with the program's nine levels of play. The levels are differentiated

by the average amount of time it takes Sargon to make a move, but they actually refer to the skill level of its play. In the early stages of the game Sargon relies on a library of about 60,000 opening positions to select its move, so (unless the option to disable the library is selected) the opening moves of a game are quick no matter what the level of play. Later, Sargon III selects a move by examining the consequences of each of its possible moves and its human opponent's possible responses.

Depending on the level of play selected, Sargon will take an average of five seconds to ten minutes to find its best move. These are the same time limits used in the Apple II and the IBM Personal Computer versions of Sargon III, but according to Kathe Spracklen, author of both Sargon III and its predecessor, the Macintosh version plays a stronger game at all levels because it looks at moves about three times as quickly as the versions for other machines.

Even at the highest play levels, Sargon III is much faster than most chess programs. Spracklen notes that “One of the criticisms of Sargon II was that while it played a strong game, a strong player

might have to let it think for an hour. Sargon III will respond with the same strength in about three minutes.” In addition, Sargon III has a terminate search instruction that can be used to force Sargon to make the best move that it has found up to that time. The end result is a faster, more challenging, and more enjoyable game.

Sargon III is also distinguished by features that go beyond the speed and quality of the game it plays. Among these are a disk-based library of opening, tactical, endgame and checkmate problems, as well as a library of 107 great games selected from master tournament play. These range from Anderssen's 1851 victory over Kieseritsky to Chiburdanidze's defeat of Dvojris in 1980. These historic chess matches offer two options. They can be loaded into memory and replayed one move at a time. Or, a player can take over control at any point, substituting his own moves and battling Sargon. Other regular game features include the ability to take back one or more moves, to switch sides with Sargon, to rearrange the board, to save games in progress and even to have Sargon suggest a good move. The Macintosh environment, with its windows, pulldown menus, and mouse-control, makes all of these features much easier to use.

For anyone who knows the game of chess, the Macintosh version of Sargon III can be used after little or no reference to its documentation. However, all versions of Sargon III include an extensive and well-written user's manual which provides program instructions, an introduction to the rules and strategies of chess, and brief descriptions of each of the great games and chess problems on the disk. This is a welcome departure from Hayden's often casual attitude toward useful documentation.

In sum, Sargon III is an excellent chess program on any of the computers for which it is available. But with Apple's Macintosh, Sargon III, and in a larger sense chess-playing software in general, seems to have at last found a home.

—Paul Bonner

For more information circle 114 on the reader's service card.

Adventure In Hitler's Germany

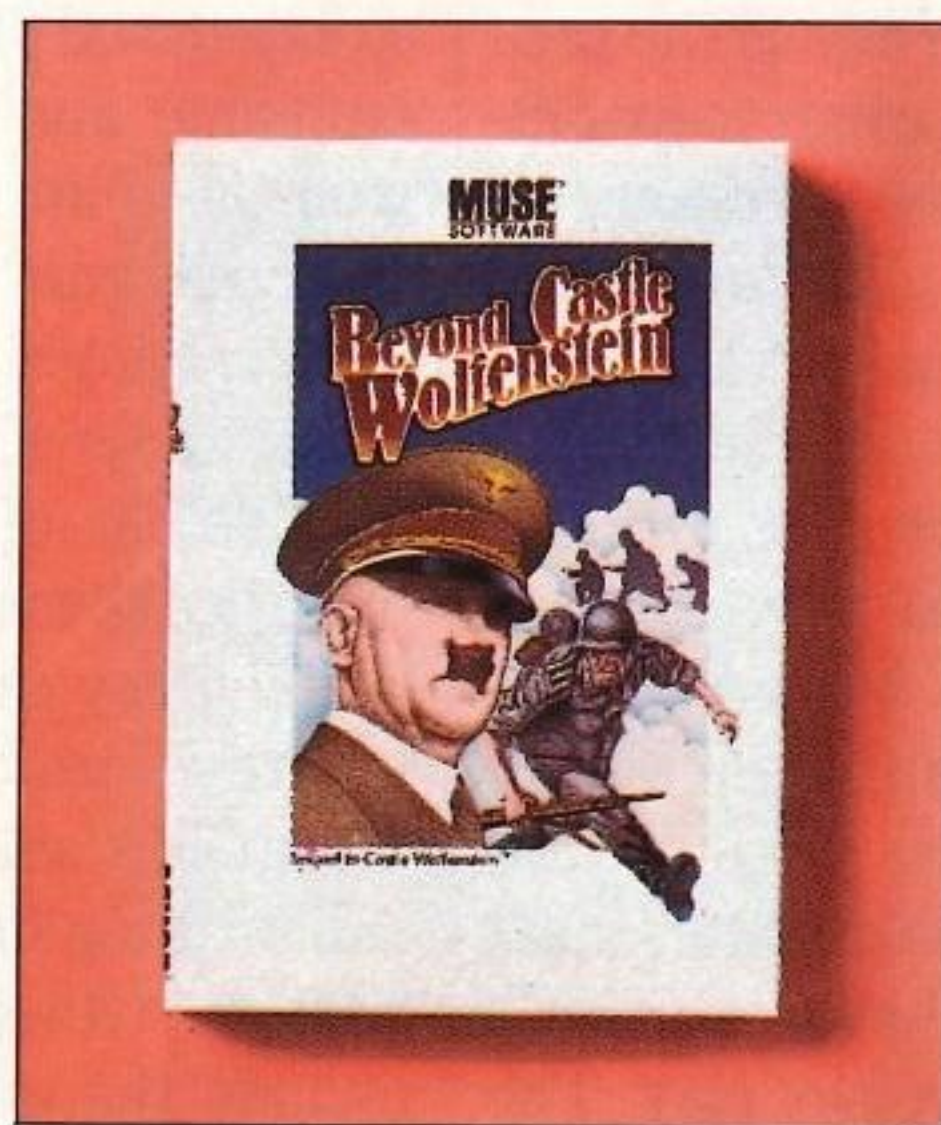
■ BEYOND CASTLE WOLFENSTEIN runs on Apple II Plus, IIe, IIc; Commodore 64; \$34.95; retail; Muse Software, 347 North Charles St., Baltimore, MD 21201; (301) 659-7212.

Muse Software's *Beyond Castle Wolfenstein*, the sequel to the company's best-selling adventure/strategy game *Castle Wolfenstein*, once again takes you behind enemy lines in World War II. Since you escaped torture in the dreaded *Castle Wolfenstein*, your superiors find you most suited for a new mission: Return to Germany, kill the Fuehrer and escape with your life. But first you must elude, kill or bribe guards patrolling the rooms of Hitler's Berlin bunker, find and reset the death weapon—a bomb hidden on the first of three floors of the bunker—and find the Fuehrer's secret conference room in the bunker.

You don't have to be a whiz at *Castle Wolfenstein* to play its sequel. In fact, you don't even have to be familiar with the game. According to Steve Byrne, Muse Software's project manager for program development, "It will be easier to play the sequel (if you have played the original), but mostly because you will already have learned the process of reacting quickly." True enough. I have never played the original, and the only trouble I had with its sequel was maneuvering my player with any kind of speed—something that comes in handy as you progress through the game.

Quick reflexes are not all you will need, however. Underground resistance fighters have provided you with a gun, 10 bullets and at least one pass to show the guards. You also have 100 German marks to use to bribe guards. This equipment, plus the objects and weapons you find in the closets of the game's 60 or so rooms, will help you on your mission. Other necessities—like extra money—can be obtained by searching the bodies of the guards you kill.

Another item you will find useful is a



joystick or paddle. The game can be played using about 25 keys on the keyboard—which is almost the entire keyboard—but it is difficult to remember which keys correspond to movement, which to aim and shoot your gun, which to use to bribe guards, etc. Even if you manage to remember the keys, you will probably have difficulty finding them in time to elude a fatal shooting. With a joystick or paddle you will have more control, but you will still need to use about five keyboard commands.

When you begin the game, you are asked to select one of three options: A) start a new game with a new bunker and preserve your current game level, B) start a new game with a new bunker and set the game to level one, or C) start a new game with the same bunker.

Any of these options will allow you to begin play. After you successfully complete a game level, or get killed, the menu choices become more meaningful. When you save a game, a fourth option appears on the menu asking if you want to resume the game where you left off. To eliminate your saved game, just choose one of the other three options. Unfortunately, when you get killed in a game, you have to go through the whole menu procedure again, as well as specify whether you are using keyboard, joystick, etc. Although the process is tedious, it does not detract too much from the game.

The game has the flavor of a real confrontation with the Germans during World War II. Guards address you in German—English subtitles are provided—demanding that you walk over to them and present a pass for safe conduct. If you show them a pass—any number from one to five—and it's not the right one, you may try another pass number or attempt to bribe them. If you happen to guess the correct pass number, remember it because it will fool all the guards on that floor. As you move from floor to floor, the pass number

changes. When you present the correct pass to the guards or they accept your bribe money, they salute you, shout "Heil!" This realism verges on the unnerving, but it puts you in the game.

The graphics that accompany the sound are clear but not elaborate—they don't need to be. Each room is viewed from above, and looks like a simple maze. The elevator that will take you closer to the Fuehrer looks like a crude elevator, doors look like doors, guards look like guards, etc. It is up to your mind's eye to fill in the background, as it would if you were playing an old text adventure. If the graphics were more elaborate, you might become distracted to plan your strategy.

The readable eight-page manual does not help you with strategy hints, though it does provide a few pointers on game play. For instance, it tells you which guards to bribe for information, but won't tell you how to interpret or use that information. It tells you how to find the combinations for locked closets, but doesn't tell you whether those combinations yield more important objects than unlocked closets, or whether they even contain objects. This lack of detail makes the game more interesting, certainly more challenging. The documentation also describes how to use the keyboard, joystick or paddle.

The game is easy to play, but it is not easy to win. If it were, it would become boring very quickly. Instead, with each new clue, you will find yourself wanting more. Muse Software has also included five skill levels to challenge you. They are: resistance fighter, allied intelligence agent, top secret operative, master saboteur and an advanced level.

For experienced *Castle Wolfenstein* players, this game will probably take a few hours to play at the first level. Fables aside, this game is very realistic in its representation of pinball action. Players are confronted with flashing lights, vibrant colors and clanging bells.

The ball is fired from a spring-loaded cannon at the right-hand corner of the screen. You pull the spring back by

—Cecilia Wess

For more information circle 115 on the reader's service card.

Pinball At Home

■ SLAMBALL runs on Commodore 64; requires one or two joysticks; \$34.95; retail; Synapse Software, 5221 Central Ave., Richmond, CA 94804; (415) 27-7751.

Remember when you used to sneak down to the corner variety store and watch the big guys play the pinball machine in the back? Remember the first time you stuck your nickel into the coin slot, pulled back on the spring-loaded

knob, and let it fly?

There was a mixture of seediness and excitement that can never really be matched by pinball's descendants, electronic video games. Or can it?

Slamball from Synapse Software combines the colorful action of pinball with the dazzle of video games by bringing the bumpers and balls, flippers, lights and bells of traditional pinball to your computer screen.

A whimsical premise for *Slamball* is presented in the preface to the documentation. It seems that some years ago a pinball machine found itself in an isolated corner of a video arcade. Of course, nobody came to drop coins in it anymore and the silver ball inside—Mr. Slamball—was growing more and more depressed. He missed the old action.

Finally he hit upon a scheme to redeem himself: He would take over a video game. The tale offers no explanation of how he went about it, but now he cameens through electronic targets, bounces off bumpers and flips through

video traps—the happiest pinball alive. Fables aside, this game is very realistic in its representation of pinball action. Players are confronted with flashing lights, vibrant colors and clanging bells.

The ball is fired from a spring-loaded cannon at the right-hand corner of the screen. You pull the spring back by moving the joystick toward you. (You control the firing speed by varying the "pull" or distance moved, of the knob.) You release the ball by pressing the fire

button. The ball scrolls smoothly upward through four windows—the action is very convincing. It looks as if the ball is actually rolling freely toward the top of the screen.

The game keeps your attention focused on the area of the machine where the action is. That is, as the ball seems to roll toward the bottom of the machine, the background scrolls continuously through windows on the playing

field. If you hit the ball with one of the flippers, it rebounds upward and the background scrolls down obligingly. The action is so unruffled that you actually get the feeling that your eyes are following a moving ball and that there are mechanical parts responding to the action of the flippers and bumpers. You can trap the ball on a flipper,

and it bounces up and down, just as though it were nestling in the crook of a real flipper. The ball realistically bounces against the rollovers and scores points when it strikes any of a number of kick bumpers. The ball can become trapped behind a flipper, remaining there until you move the joystick.

You can "jostle" the machine by pressing the fire button and moving the joystick in the direction you want to bounce the ball. It's almost as if you had your hands on either side of a glass-protected field and you were abusing the machine in earnest. If you do this too much, however, you'll tilt the game, and lose your turn on that ball—just like the real thing.

There are four sets of flippers to use, one in each window. They are controlled by the joysticks. When the fire button is released you move the joystick to the left to activate the left flippers and to the right to activate the right ones. Moving the joystick toward you (after the ball is in play) causes both flippers to move. When two people play, one handles the ball and jostling maneuvers, the other controls the flippers.

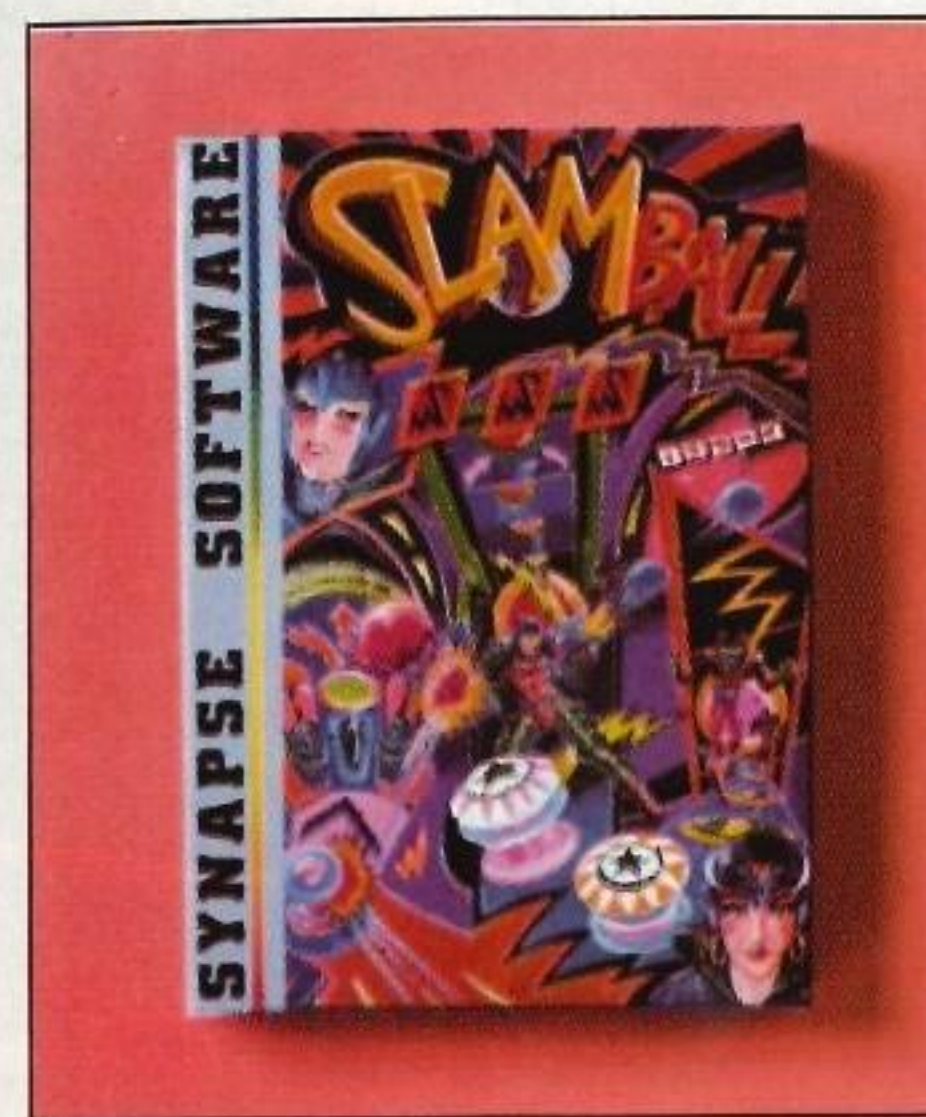
There are four levels of difficulty. If you knock down an entire series of designated targets, you move to the next level. Each time you hit a floating bumper, a score multiplier is changed to a higher level. Then anything hit for points—bumpers, targets, and so on—has its value multiplied by the number then in effect. The score is displayed at the bottom of the screen. You can abbreviate the game by choosing to use three balls per game—function key F3 toggles between the two options (three or five balls) on the title screen of the program. You select one or two players by toggling function key F5. You start (and restart) the game by pressing the F7 function key—during play, the same key will abort the game and return you to the title screen. Another feature allows you to cheat a little: Pressing F1 during play freezes the ball on the screen. If the action is a bit too hot and heavy, you can take a breather by stopping the ball, consider the next action to take (based on the direction it was heading), then jiggle the joystick to resume action right where you left off.

Complaints? Only minor ones. The program takes a long time to load, even on disk drives. And the fact that two players can't play independently, alternating balls and then comparing scores, or that exceeding some high score won't win you an extra ball or game just for the sake of competition, could be a drawback for some pinball aficionados. Also, your highest score is not written to disk, so the only way to keep track of your skill is to record the scores on paper.

Slamball is a fine diversion. It successfully mimics the action of the real thing. It is so realistic that it almost ceases to be a video-type game and relies on an appeal that parallels the real thing. Not that this is bad, it's just if you want the razzle-dazzle of an electronic gizmo, it is in some ways disguised by *Slamball*. The worst thing you can say about it is that it's too much like the real thing and may hold your interest only as long as a real pinball machine.

—Charles A. Miller

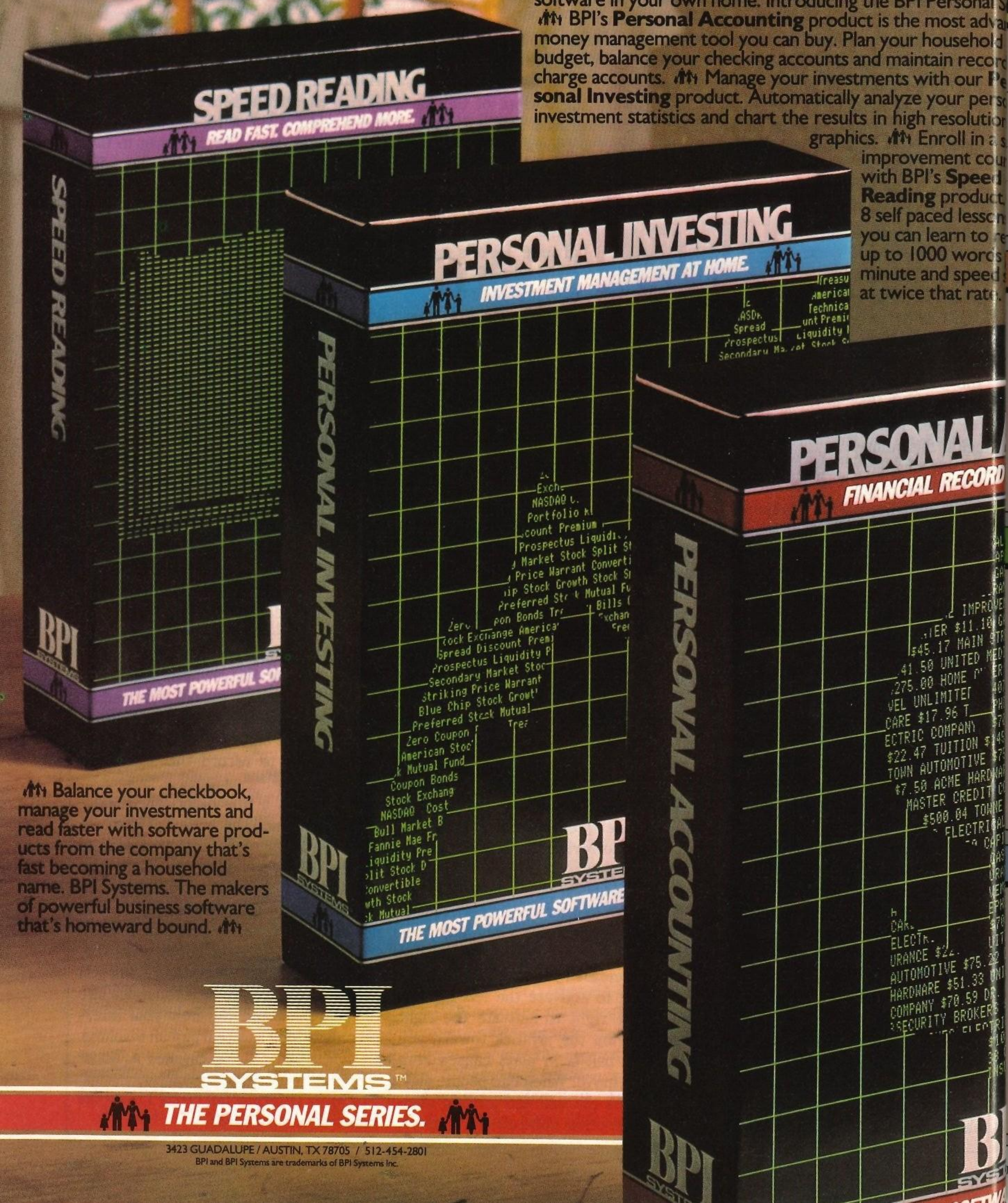
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HOME EDUCATION

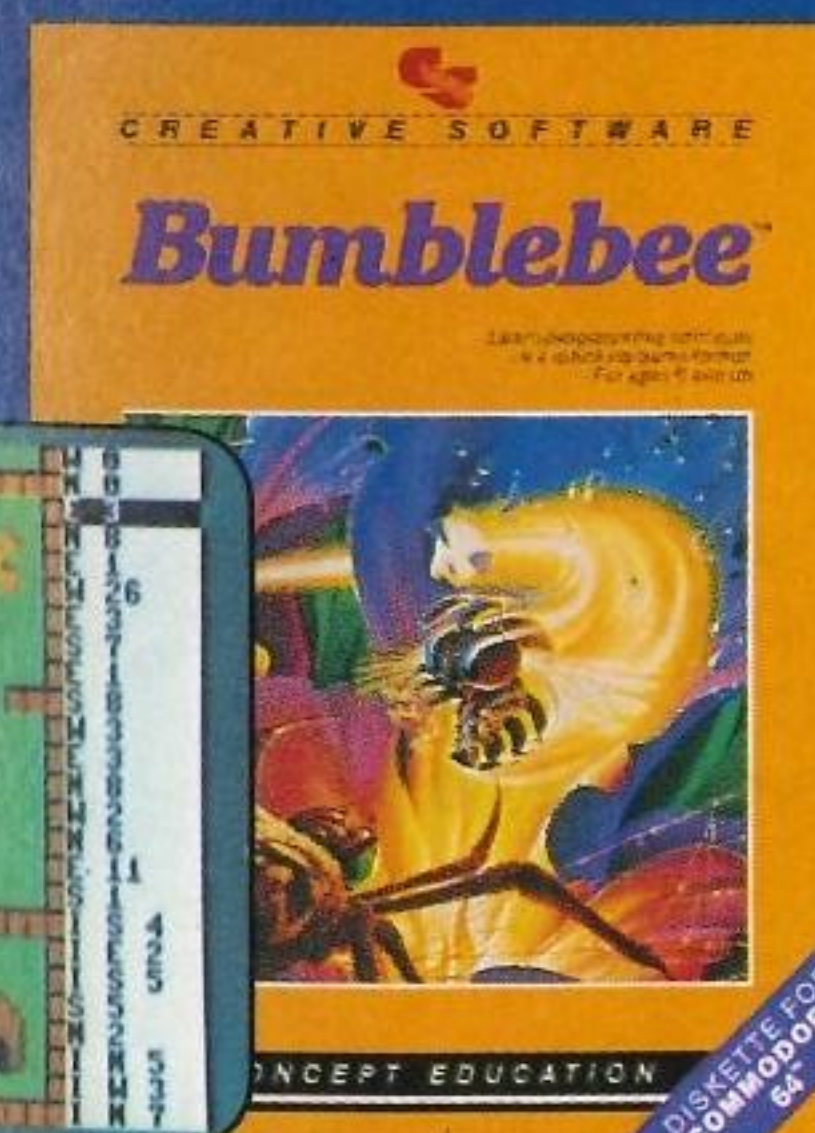
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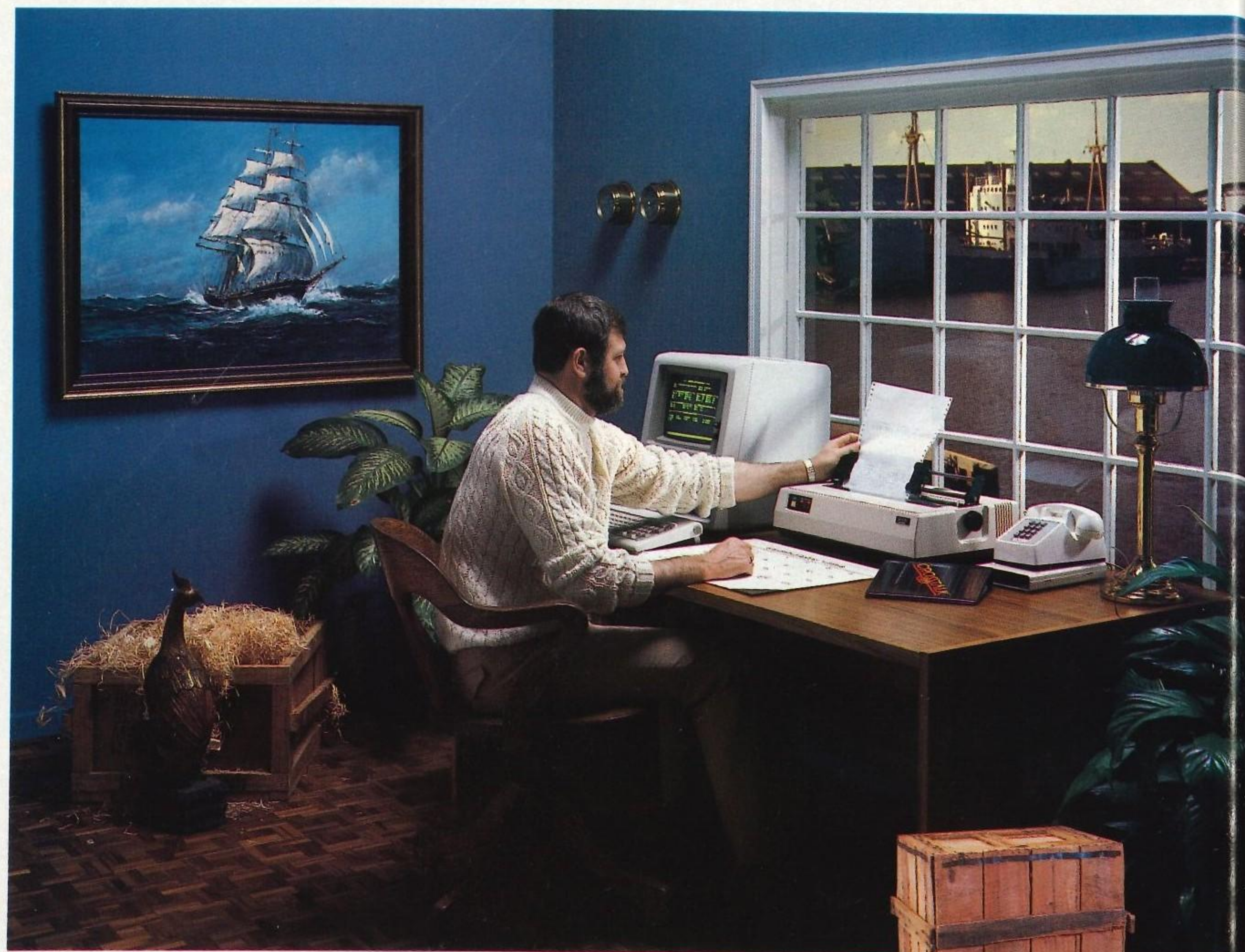
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**PERSONAL
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'TEST DRIVES'

As the name implies, these are in-depth demonstrations of some of the significant programs on the market. In this issue, we give you complete run-throughs of three popular packages and a software series with practical details on functions and features.

**PFS SERIES • MULTIPLAN
MUSIC CONSTRUCTION SET • BANK STREET WRITER**

The PFS Family

A complete look at the core packages in the PFS line—individually and as an integrated system

■ **PFS:FILE, PFS:REPORT, PFS:GRAPH, PFS:WRITE** runs on Apple IIe and IIc, \$125 (File), \$125 (Report), \$125 (Graph), \$125 (Write); Apple III, \$175 (File), \$125 (Report), \$175 (Graph), Write not available; IBM Personal Computer and compatibles, \$140 (File), \$125 (Report), \$140 (Graph), \$140 (Write); TI Professional \$140 (File), \$125 (Report), \$140 (Graph), Write not available; TRS-80 Model III, 4, \$124.95 (File), \$99.95 (Report), Graph and Write not available; retail or direct order; Software Publishing Corp., 1901 Landings Dr., Mountain View, CA 94043; (415) 962-8910.

PFS products have a reputation as inexpensive, easy to learn software that won't scare off the beginning computer user. On their own, the packages are efficient and flexible. But the programs can also intertwine quite handily with one another, providing more power than

could be expected from programs this easy to use.

The PFS family includes six programs plus a series of 12 templates. This test drive outlines the features of the four core products: PFS:File, the file management software; PFS:Report, the companion program to File, which sorts and prints files by various categories; PFS:Graph, the program that makes bar, pie and line graphs; and PFS:Write, the word processor. Finally, we'll look at ways in which the programs can work together.

(The other two programs are PFS:Proof, a proofreading package and PFS:Access, a telecommunications program which connects the user to on-line information services, such as The Source. The templates, which provide ready-made applications of File and Report for tasks like keeping inventory and tracking cash flow, are called

PFS:Solutions.)

We'll be looking at the Apple version. The IBM version is nearly identical. (A few minor differences—Apple's control-C command is the same as IBM's return. Apple's help key, option H, is replaced by function key F1 in the IBM version.)

PFS:FILE

PFS:File is basically a paperless system sans paper. A form design created to suit your exact needs, fills in the items as you would on a paper form. Once the form is created, it's filed and saved by the program. Copying. Those commands remain consistent throughout this and all the other programs in the PFS family—control-C takes you to the next step, and escape takes you out of the screen you're working on and back to the main menu. Once the copying process is completed, you cannot begin working until

Forms can be revised without losing data that's already been input. Information can also be copied from one file to another with no risk of data loss.

When the program is first booted, this message appears: "You should now make a copy of your PFS program diskette. To do this, you will need one blank, double-density diskette. Press control-C to start making the copy. Press Esc if you are not ready to make the copy at this time."

If you tell the program to copy before you've properly inserted a blank disk, you'll get a message informing you to insert a blank diskette in the drive. Once that's done, the program double-checks to make sure you know the disk will not be overwritten by the copying, and again gives you the escape option if you'd rather forget the whole thing.

The copying process (with one drive) takes several minutes because there are even different parts of the program which each must be copied individually. That means you'll spend some energy swapping the PFS program disk and the copy disk in and out of the drives.

Each time you switch a disk, you'll see a message like this one: "Put the PFS diskette in Drive 1. Press ctrl-C to continue copying. Press Esc to abandon this copy." Those commands remain consistent throughout this and all the other programs in the PFS family—control-C takes you to the next step, and escape takes you out of the screen you're working on and back to the main menu. Once the copying process is completed, you cannot begin working until

you put a write protect tab on both the copied and the original PFS:File disks. The program allows you to make one and only one backup copy. After you've started the copy procedure, you'd better finish because you won't get another opportunity. The documentation spells it out loud and clear (although no on-screen message gives you the warning): "If you complete steps one through five of the copy procedure, but do not finish the entire procedure, you will lose your one opportunity to copy the program diskette."

Once the program is copied and write protect tabs are attached, you can start working with the program. Pressing open apple-control-reset reboots PFS:File and brings you to the main menu, where you'll have six options: design file, add, copy, search/update, print, and remove.

The first step is to create your forms. Type in selection one, for design file, then assign a file name to the file you are about to create. Press control-C, for continue, and you are faced with another choice.

You can create a file (selection one) or change the design of an existing file. When you're starting out, you'll choose to create a file (selection one) then press control-C to continue.

The message you see next warns: "The diskette in Drive 1 will be com-

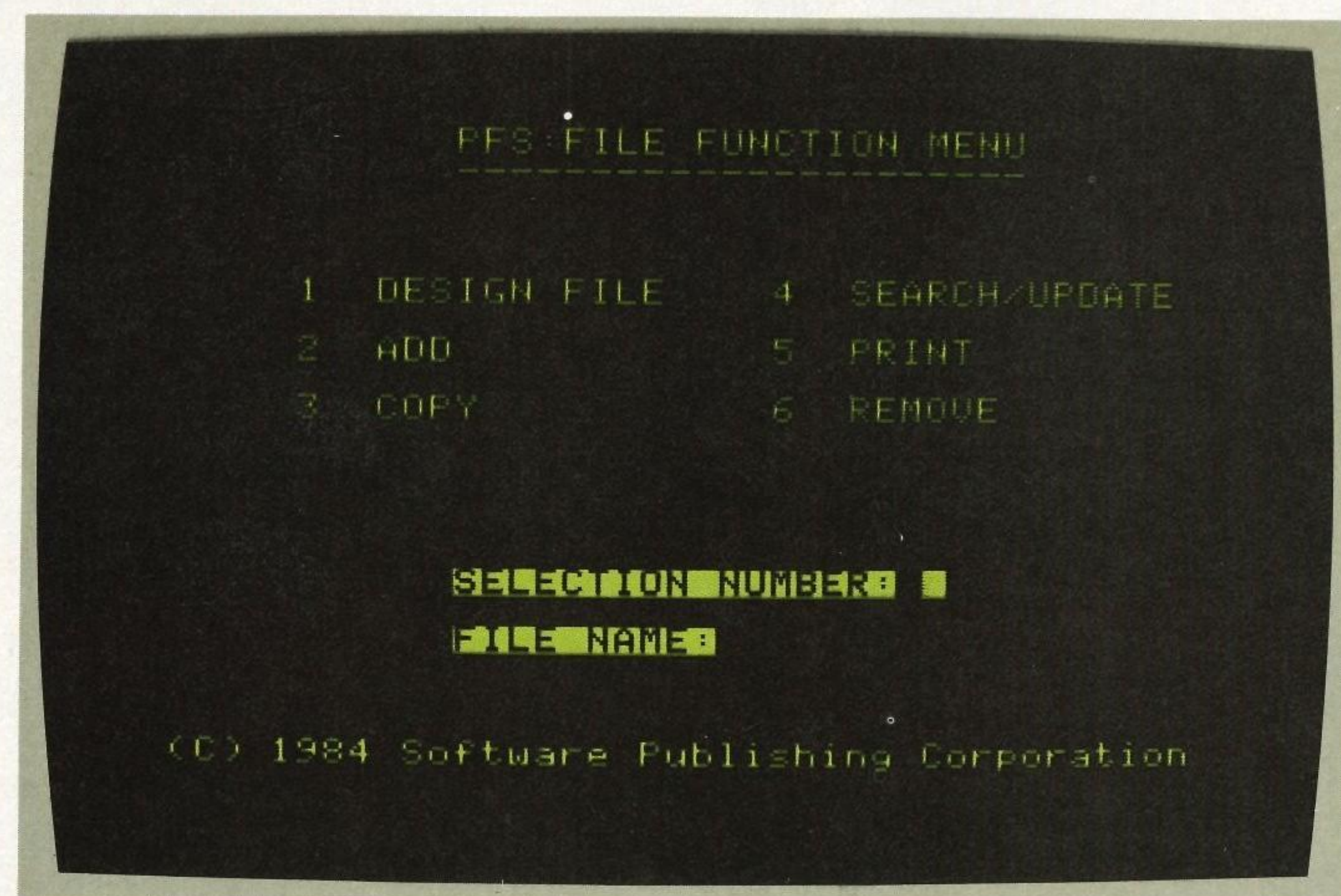
pletely overwritten. Press Esc to abandon this operation. Press ctrl-C to continue."

Once you've pressed control-C, you can begin designing your form. The screen is blank at this point except for a status line at the bottom (which tells you what percentage of the disk is full, the name of your file, the page number, and what function you are in—design, at the moment). You create the form you'll be using by typing in your categories, wherever you want them, followed by a colon. Hitting the tab key will get you from one category to the next.

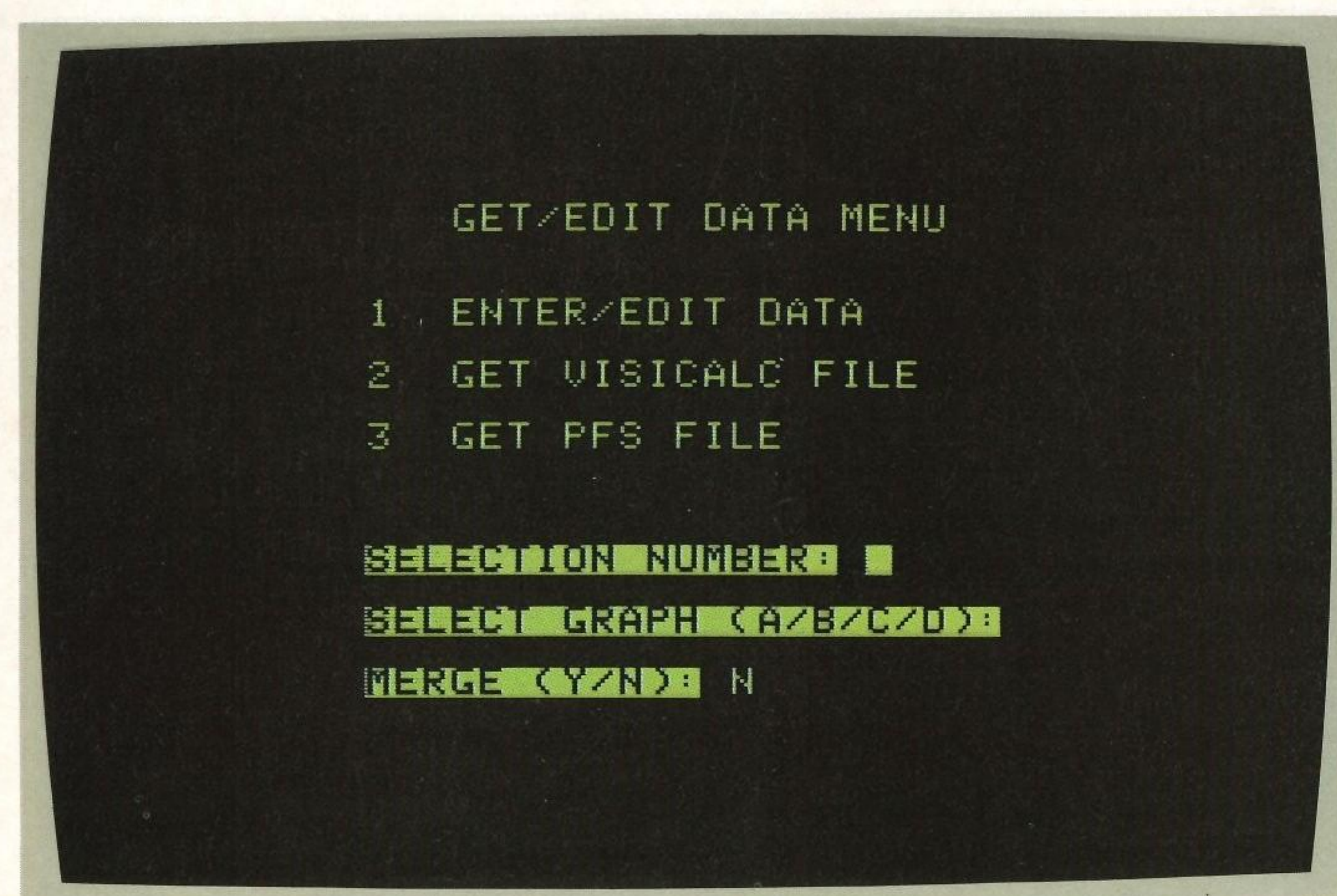
It's wise to map out the kind of form you're going to need before jumping in. You have to decide which categories of information you're going to track (these are called items), and the order in which they should appear on the form.

It's important to decide which item you are going to place first on the form because a sort done on the first item is much quicker than a sort done on any of the other items. Software Publishing claims a search time of only three seconds when sorting by your first item; it can take substantially longer to search through subsequent items. Therefore, your first item should be the category you'll search for most often.

There are a few sample forms in the documentation which may help you, or you may find that one of the PFS: Solutions templates suit your needs. But



The main menu for PFS:File, a file management package, offers six user options.



for the most part, you're on your own. You know what information you need to track better than anyone.

When you're done creating and want to store the form, control-C will get you back to the main menu, where you follow directions for saving files.

The next step after designing and saving the form is to fill it with data. The second option on the main menu, add, brings you to a screen that contains the form you just designed. Your items appear in reverse video.

Entering data is as simple as typing in any form. You hit the tab key to get to the next item, filling them in as you go. If you find you haven't left enough room to fill in some information, you can always go back and change the forms without losing data.

The format for data entry is contained in the documentation. Dates, for example, should be ordered year/month/day, with each number two digits, so the program can search for them properly.

When you're done entering the information on one form, control-C will enter and save the information, and brings you to the next form waiting to be filled. Once you've entered all your information, hit control-C to save it, then Esc to get to the menu.

The menu's third selection, copy, allows data to be copied onto another disk. You can copy only the design of your form, the selected forms, or make a

complete backup system and copy the whole diskette.

You would use the first option when your file becomes full and you want to start a new file that uses the same form design. The second and third options are used as backups for your data, or to begin a new and different set of files. To use this function, select one of the three copy options, give the file to be copied a new name (you may want to name a copy of your staff file "staffA" or something similar), and insert a diskette on which to copy. If you are performing two of the copy options—copy only the design of your form, or copy your whole diskette—a simple control-C will do the trick.

If you are copying selected forms, you will need to tell PFS:File which forms you want copied, by filling in "retrieve specifications." A retrieve specifications form will appear on-screen, which is exactly the form you designed. You fill in the item or items you want the program to sort, press control-C, and PFS:File will pull up those files. Copy them to the second disk, the program will tell you how many forms were copied, and instruct you to press control-C to continue. For example, if you wanted to start a new file that contained the forms of all your customers who live in California, you would fill in CA next to the item State, then press control-C, and PFS:File will copy the data.

File's sort function lets you search through your data in a number of ways and allows you to search for and update specific files of data. You can search using any of the items on your form. Combining two or more items lets you refine your search. A salesman could pull up every contact living in New York City who is interested in purchasing widgets and who was last contacted in March 1984 or earlier.

Selecting searchupdate from the menu and pressing control-C will let you retrieve specifications from the form you designed, and the search form used in the copy function described above.

You describe the forms you want to find by filling in items on the retrieve specifications form. You can enter a retrieve specification in as many items as you wish. Only those forms meeting all the specifications between Jan. 1, 1978 and Dec. 31, 1979, are found. If no retrieve specification is entered, File retrieves every form whose first name is not John.

By filling in various items on the retrieve specifications form, you can make your search very specific. You can even use the wild card feature to look for words that may not be exact matches. If, for example, you wanted to look up the form for a woman you'd just met, but couldn't recall if her name was Kathy or Kathleen, you could call up all the files and print the form by pressing control-

ath. Using the wild card feature, you could search for "Kath.."

It's not a bad idea to use the wild card characters even when you *know* what you're looking for. If you enter "..Kathy Wilson.." PFS:File will retrieve the file even if the record is actually filed under the name Ms. Kathy Wilson or Kathy Wilson, M.D.

You can even use the wild card to search for a word buried in other text. For example, your form contains an item called notes, the wild card feature will let you locate any word among all the notes. File will search through your notes and let you know of any matches.

In addition to wild card searching, you can also search for numeric matches (for example, every record with ZIP code 60609), numeric range matches (every employee hired between Jan. 1, 1978 and Dec. 31, 1979), and the "not" match (every employee whose first name is not John).

Once you enter your retrieval specifications, press control-C and File will search them out for you. You can see each successive form that meets your criteria by pressing control-C.

Once you've retrieved a form, you have a number of options. You can update the form simply by typing in any changes then pressing control-C. You can review the form, leaving it as is. You can print the form by pressing control-

O. Or you can remove the form from the file by pressing control-R.

When File runs out of forms matching your specifications, your screen will read, "Forms found:(number) press ctrl-C to continue."

When you want to print, PFS:File presents a two-item menu: print forms and define print specifications. Print forms lets you choose the forms you want to print, the items from each form you want to print, and the way you want the items printed. Define print specifications lets you save your print specifications to use whenever you want.

There are three different forms to be filled in as part of the printing process. First, you'll see the retrieve specifications form. This is where you'll choose which *forms* you want to print information from.

This form, again, is simply a blank version of the original form you created. You fill in the blanks with specifics of forms you want printed, just as you did when you *searched* for specific forms. For example, to print the form of every client who lives in New York, you'd type "New York" next to State and leave the rest of the form blank. If you don't enter any retrieve specifications, File will retrieve and print every form in the file.

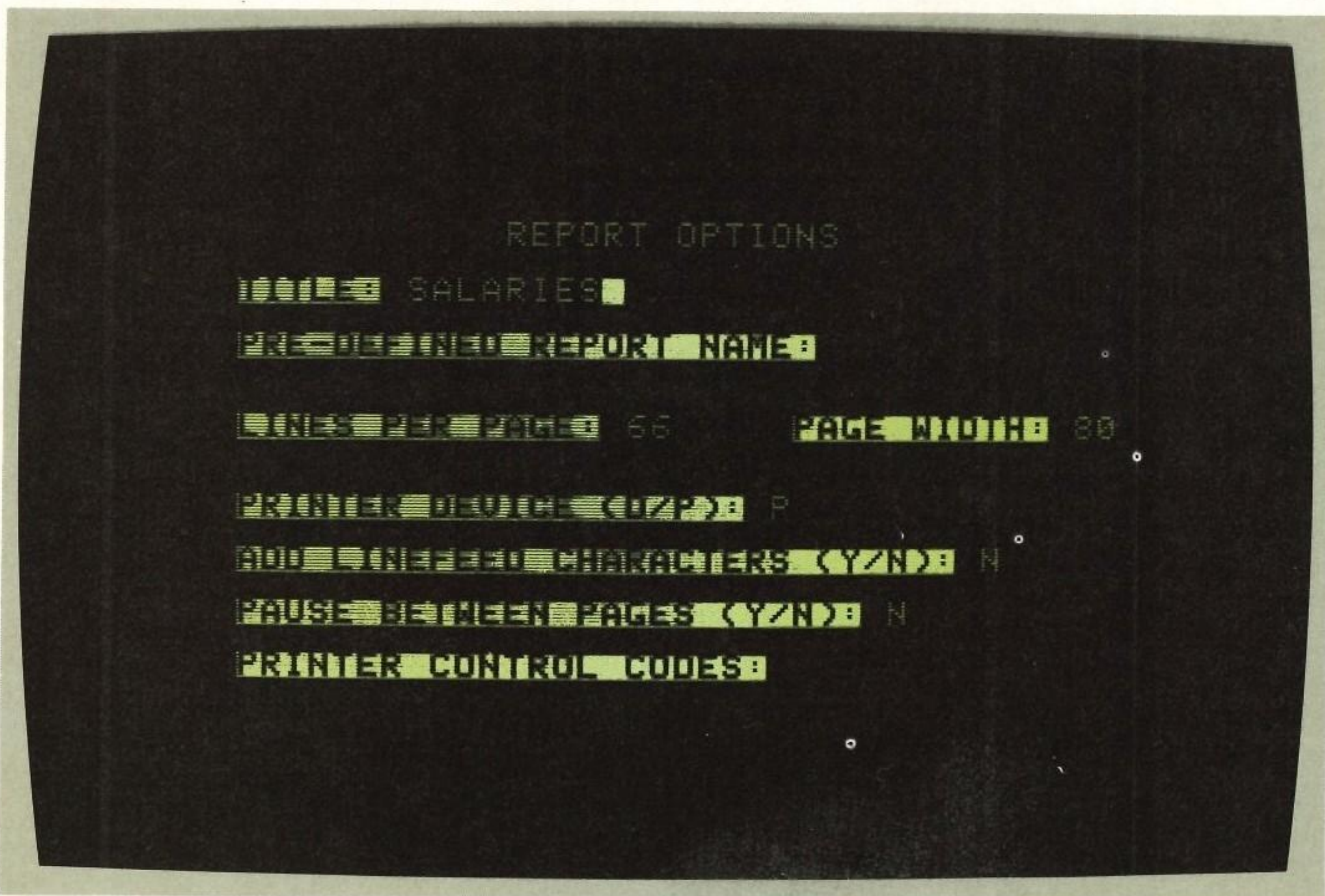
When you've entered all the retrieve specifications needed to identify the forms to print, hit control-C to reach the second of the three formatting forms:

the print option screen. This screen appears whenever File is going to start printing. It lets you choose the format of your information—number of lines per page, number of copies, whether you want pauses between pages and whether you want item names printed. There is space for entering printer control codes which instruct File to print in special styles, such as italics. There is also a space to instruct the printer to automatically line feed each line, if it doesn't already. Finally, you have the option of calling up a print specification if you've already defined one and want to use it here.

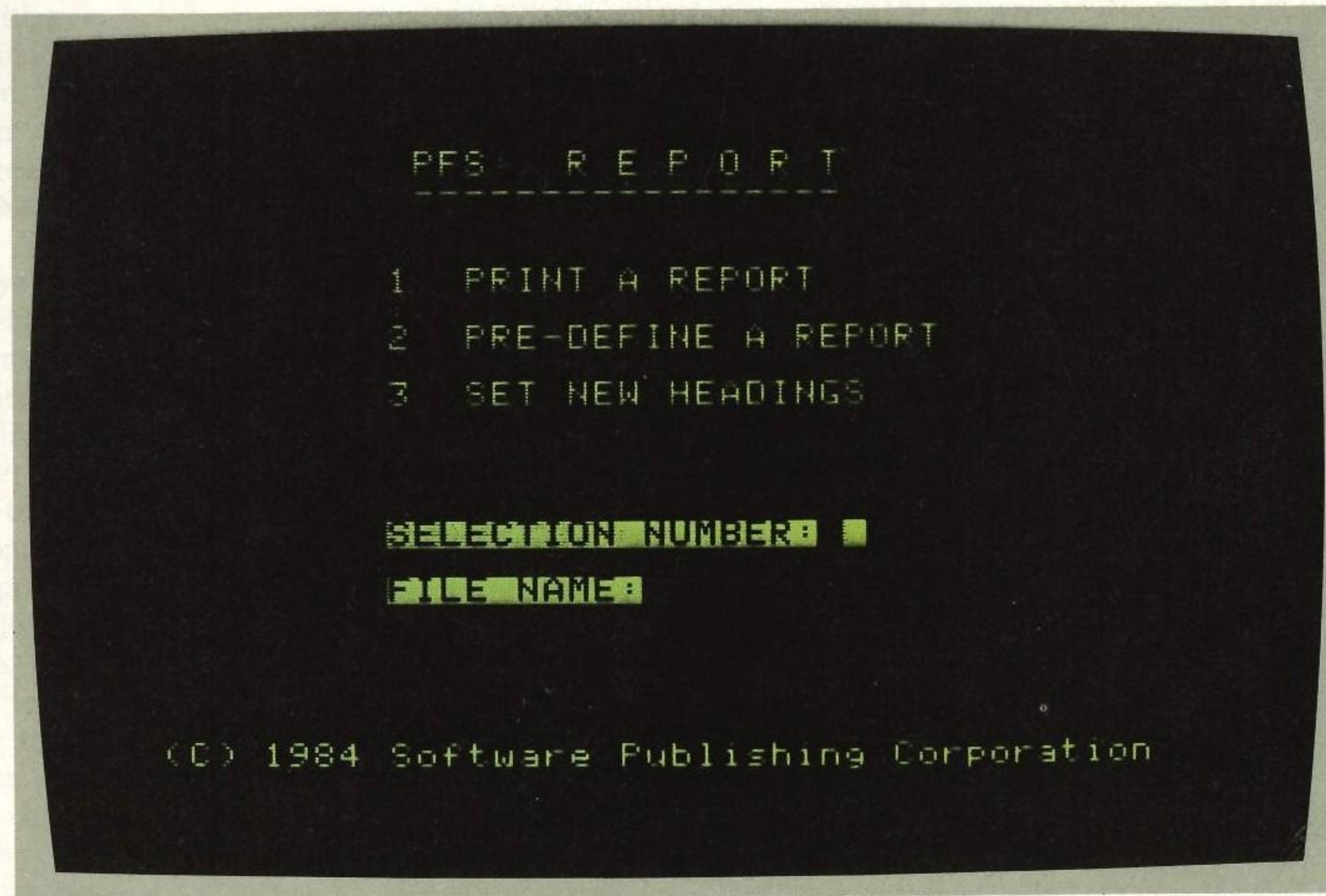
Once the print instructions are defined, press control-C. There is one last form to complete before printing. It is called the print specifications form and, again, appears as a blank version of the form you created.

Where the first of the three print forms lets you choose simply which forms to print, this last one lets you choose which specific items of the form you want printed, and how you want to arrange them on the page. The biggest advantage is that you can generate forms, such as mailing labels, containing exactly the information you want and spaced the way you desire.

To complete the print specification, tab through the form filling in x's and + 's next to items you want printed. An x means print this item and advance the



On the report option number 2 on the main menu lets you try out various report designs.



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printer a line. A + tells the printer to print an item, without advancing to the next line.

If you want your printout sorted alphabetically or numerically, you can combine an "s" (for sort) with one of the + 's or x's. Your printout will be ordered by the item you specified (last names, ZIP codes, dollar values, etc.). Control-C will begin the printing.

The sixth and final option on File's main menu is remove, which allows you to remove files you no longer want. If you want to see each form before it's removed, however, you would instead select search/update from the menu, and use control-R to remove.

That's a run-through of PFS:File. Each of your data disks holds only one file (or one major category of records), but many *forms* can be stored within that file. Forms can be up to 32 pages each, and up to 1000 forms can be stored per diskette, depending on form size.

PFS:REPORT

PFS:Report is an analysis tool designed to work with existing PFS files. Report sorts through the files, retrieves the information you want, then incorporates it into one report.

The program produces reports in a columnar format, with each column corresponding to an item from the form created in File. Report can produce a simple printout of the columns, or it can

sort through columns of numbers and perform calculations, including averages, totals and counts. The arithmetic calculations can then be printed in report form.

In addition to its calculation capabilities, Report also provides some special sorting features. Report can sort your information both alphabetically and numerically, and you can sort by more than one item at once.

The program comes with two disks. The first contains the actual Report program. The second is called Sortwork. Report uses Sortwork for temporary storage while it is sorting your information and preparing a report. Sortwork also contains a sample file on which you can practice.

If you lose or damage your Sortwork disk, another can be created using the design file function of PFS:File. Documentation instructs you to copy the disk at the start (using the copy function of PFS:File) so you will have a permanent copy of the sample file.

After you boot up Report, you are ready to swap disks. Remove Report from Drive 1 and replace it with the disk containing your PFS data file. From here on, the documentation instructs you not to remove your file from the disk drive or turn off the computer unless the main menu is on the screen.

The main options in Report are: print a report; predefine a report, so you can

save the report design for further use and set new headings, which change the report specifications form. This, too, is virtually identical to File's final print screen. On-screen is your form that's not yet filled in. Completing this step determines which items appear as columns in the report and in what order they appear. Each report can have up to nine columns.

While File used + 's and x's to determine which items to print, Report uses numbers one through nine to signify that to print. The order you use here is the order in which the columns will be printed.

Which ever item you assign to number one will appear in the first column. It is the item Report will sort by, alphabetically or numerically. If you don't want the report sorted at all, the documentation instructs you to begin ordering with number three.

You don't need to place a number next to each item. If you don't want to include certain categories in Report, simply leave them blank. Report will only print those items you specify.

PFS:Report can also total, count and average the numbers in your columns, per page, page width and line feed commands, if necessary. You can also pause between pages (so you can opt to insert a special paper for each page) or instruct the printer to use any special printing features it can access.

When you've entered all the retrieval specifications needed to identify the forms to be included in the report, press control-C. The report options form will appear next. This is nearly identical to File's print option screen. Here you give your report a title, and specify line number, per page, page width and line feed commands, if necessary. You can also pause between pages (so you can opt to insert a special paper for each page) or instruct the printer to use any special printing features it can access.

After the report options form comes the third and final step before printing: the report specifications form. This, too, is virtually identical to File's final print screen. On-screen is your form that's not yet filled in. Completing this step determines which items appear as columns in the report and in what order they appear. Each report can have up to nine columns.

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The documentation says predefining a report is useful for experimenting with a variety of report designs before you decide which one you want to use. Since Report saves up to eight different report designs for each PFS file, you can try them all until you find the one you want.

The third main menu option, set new headings, allows you to print one item name on your report, while your actual form has a different title. Perhaps the one in your form is too lengthy for a printed report. Changing the headings can sometimes save space.

To set a new heading, choose option three from the main menu. When the blank version of your form appears, type

Report can sort information both alphabetically and numerically, and can sort by more than one item at once.

in the new heading next to the old one. Press control-C, and Report stores your changed headings.

That's all there is to Report. It combines with File to give you more options in your report styles. It's especially useful if your records have numerical data that you'd like to analyze.

PFS:GRAPH

PFS:Graph produces presentation-quality charts and graphs from the data contained in PFS files. The program includes a diskette of sample graphs which can serve as guidelines for your own graphics.

The Graph manual provides an introduction to graphing basics that will smooth the way for understanding how the rest of the program works. There's a brief lesson explaining the X and Y axis (the horizontal and vertical lines of a graph) and how they are used, as well as an explanation of the three graph types that PFS:Graph provides—bar charts, line charts and pie charts—and their uses.

Information to be graphed can be entered in three ways: straight from the keyboard, directly from VisiCalc files, or from files created with PFS:File.

In order to make the best use of PFS:Graph, you should have a printer or plotter that works with the program. Otherwise, you'll be limited to seeing your graphs only on a monitor and never on paper.

With the Apple IIe or IIc, the program can print with the following printers: Apple Scribe, Imagewriter, Silentype, Epson MX-80, MX-100, RX-80, FX-80, NEC 8023, C. Itoh ProWriter, IDS Prism, Microprism, Okidata 84, 92, 93, and any printer connected with the Grappler (or equivalent) or PKASO graphics interface card.

As for plotters, the documentation

states that any of the following, plugged into either the Apple Super Serial Card on the Apple IIe or a serial port on the Apple IIc, will work: Apple Color Plotter (model 410), HP 7470A, 7475A, HP-LOT DMP-29, DMP-40, DMP-40-2, Strobe 100, 200, 260; and for the Apple IIe, the Sweet-P 100 plotter, plugged into a parallel interface card.

Graph's main menu lists six functions: get/edit data, display chart, define chart, save chart, get/remove chart, and print/plot. Most of your time will be spent in the first and third functions, where you enter data and decide what the chart will look like.

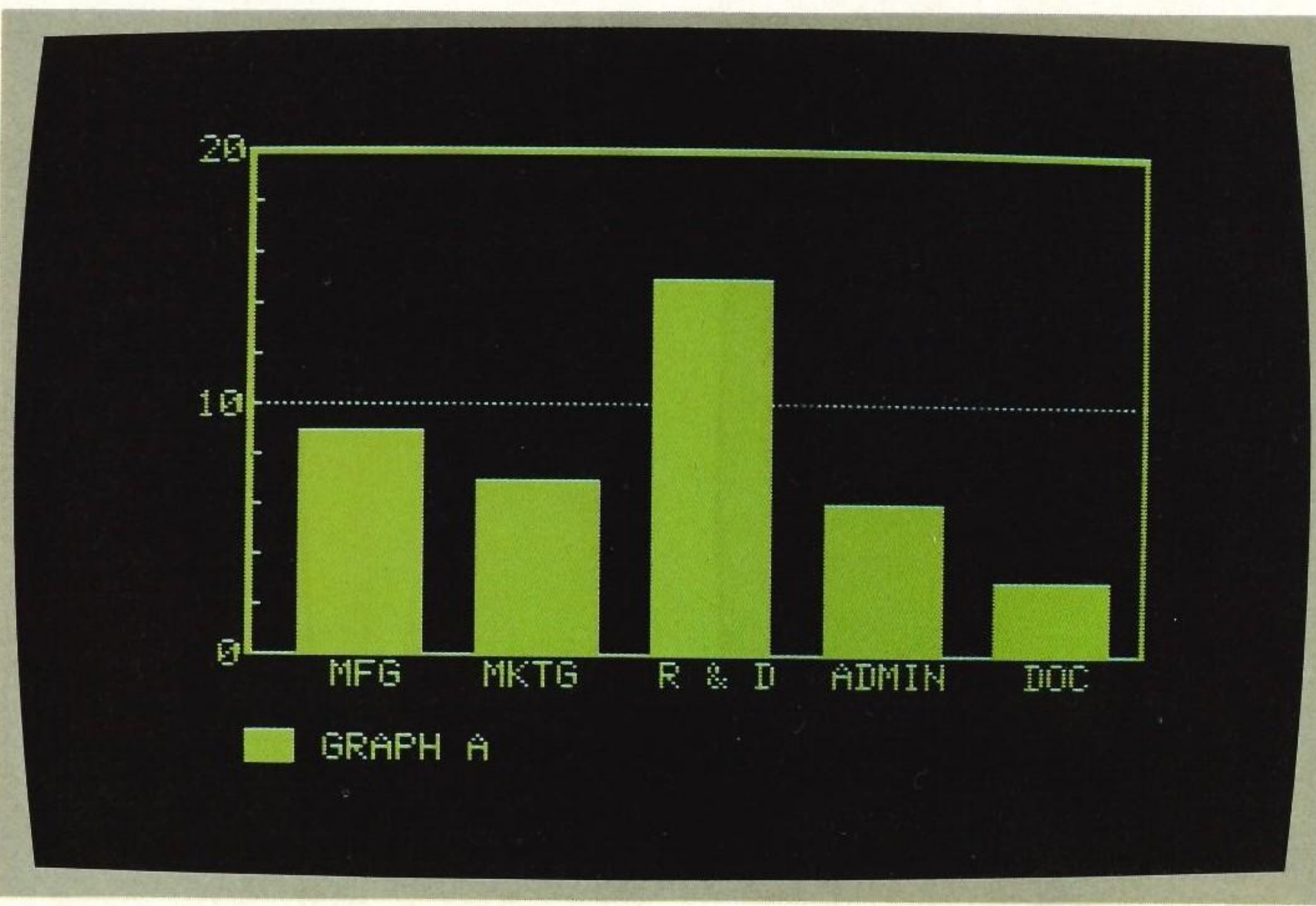
Choosing the first selection on the menu, get/edit data, will bring you to another menu where you'll specify if you are going to type in your data, or if you want Graph to pick up the information from VisiCalc or PFS files. Two other choices on that menu pertain to editing functions. One asks you to specify which graph on the chart you want to edit (up to four relationships may be graphed on any one chart). The second asks whether you want to merge the data you are entering with data already in the graph, or if instead you want to *replace* the existing data.

If you are entering information directly from the keyboard, you'll arrive at a screen that's split down the middle. On the left, you'll input your "X data"—that information that will be represented along the bottom of your graph. On the right, you'll input the "Y data," or that information that will be represented along the vertical axis of your graph.

There is one more item to fill in at this point, and this one can be a bit confusing at first. It's called the "X data format." What PFS:Graph needs to know is whether your X axis data will be entered in numbers, letters or dates.

PFS:Graph gives you codes to enter for each of these three X data formats: I for identifier (letters), N for numeric data, D for days of the month, M for months, Y for years or Q for quarters. The program will use this information to make sure your X axis is ordered correctly.

Some slightly different issues are of concern if your data is coming from pre-existing files (VisiCalc or PFS), rather than from direct keyboard input. To use information directly from a VisiCalc file, the file must have been stored in



PFS:Graph keeps graphs simple, yet offers a good deal of flexibility.

DIF format. Further details on the storage process can found in the VisiCalc manual.

Once you're past that hurdle, you insert your DIF file, identify the name of the VisiCalc file, and specify the "X data format." Then you'll name the rows or columns that contain the information you want to use for your X and Y data. From there, pressing control-C instructs Graph to read the data from the file and store it in memory. You are returned back to the main menu, where you can display the graph to see how it looks.

For the third manner of data input using data from PFS files, you'll go through a few steps made all the more simple by your previous experience with PFS:File. You instruct the program to "Get PFS file." Insert the PFS file in the drive, press control-C, and Graph will display the retrieve specifications form, which is the same retrieve specifications form from PFS:File and PFS:Report.

Here you will let the program know which forms to retrieve so the data you want will be included in Graph. If you want Graph to read data from all forms in the file, press control-C without entering anything in the form. If you want to read data from selected forms, enter your retrieve specifications.

Again, you can specify that entire words be matches, or parts of words by using wild card characters. For exam-

ple, if you want to analyze how well you've been making sales to people named Kathy or Kathleen, you could enter Kath.. in the retrieve specifications form (next to the item, "name"). The program will call up all forms which contain people whose names begin with Kath. Remember, you are not telling the program which items you want graphed. At this point, you are only stating if there are any specific forms you want to examine, leaving out other forms.

When you are satisfied with the retrieve specifications, press control-C to continue. Graph displays the blank form again. Now you'll indicate which items will provide the X and Y data. To do this, enter an X next to the item that will provide the X data—dates of sales, perhaps—and a Y next to the item you want for the Y data—sales figures, for example.

PFS:Graph demands a few more pieces of information before it is prepared to graph. You'll need to enter your X data format again, to tell it what kind of information will be along the X axis (numeric, letters or dates). If the information is a date, you need to tell the program what the dates in the file look like, and how you want them to be entered for graphing purposes.

Once all that is done, press control-C. Graph reads the data and stores it in memory. Here's where the real graphing begins.

Back at the main menu, option two display chart. Press 2, then control-C and you'll see the chart that's in memory. It's that simple.

Option three, define chart, is used to change the way Graph plays your chart, and to add explanatory information to it. The fine chart menu is where you'll choose the type of graph—bar, line or pie—define the "legend." Legends are descriptors which appear on the bottom of the screen explaining what each graph is supposed to represent. If, for example, you are making a bar chart which contains graphs of three different items—wheat, corn and soybean sales—you'll need a legend to identify which bar stands for which product.

The define chart menu also lets you choose whether your chart is placed on a grid, whether it is in color, whether several graphs will be stacked or placed side by side, and what the chart's title will be. You can also specify minimum and maximum values for the Y axis. (You could, for example, obtain a detailed picture of your sales that only fit within a range of \$100 to \$500. Graph would then you specify \$100 as your minimum and \$500 as your maximum and zoom in on that data.)

You also have the option of graphing cumulatively. (If you sold \$3000 worth of soybeans in January and another

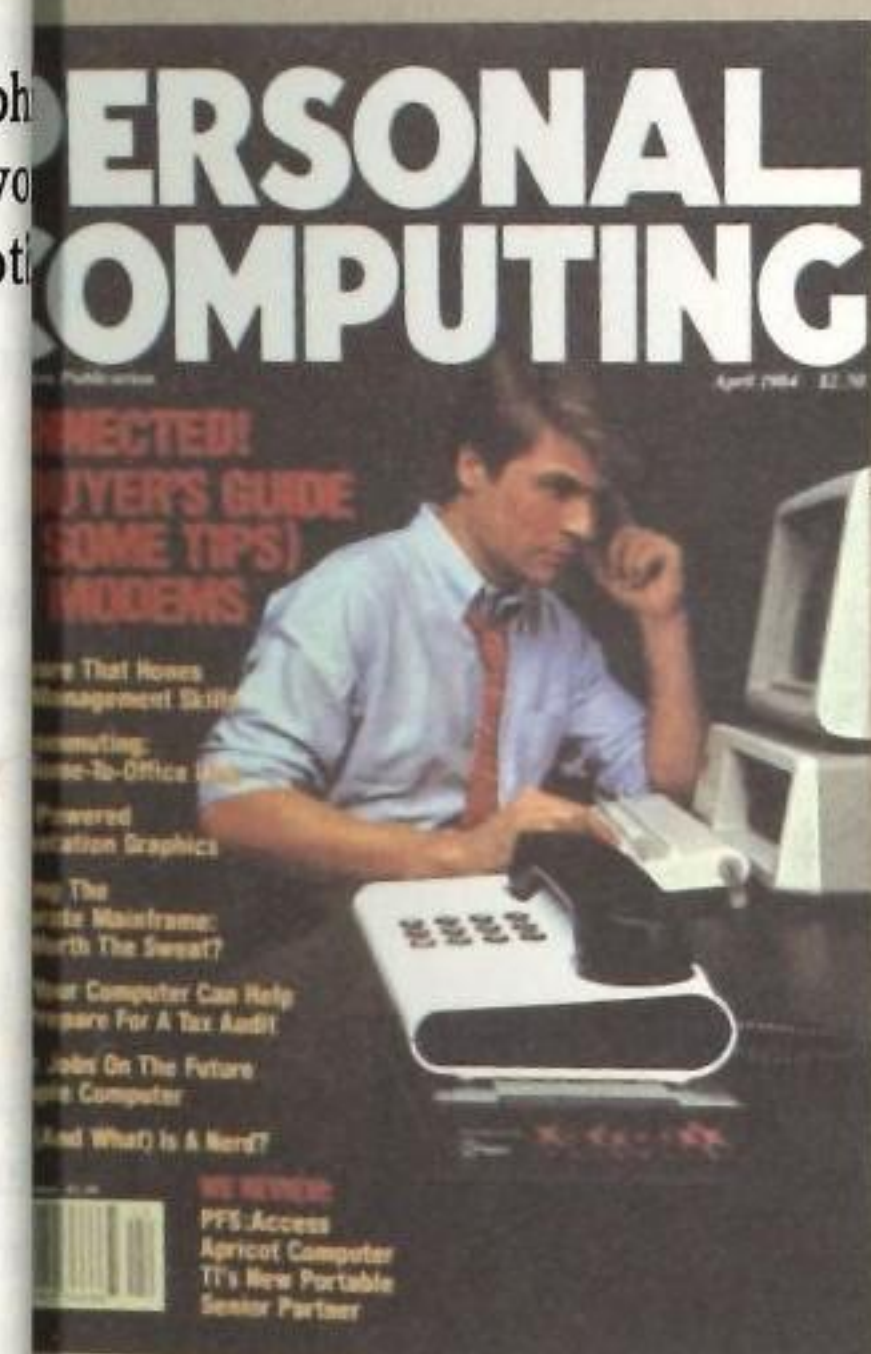
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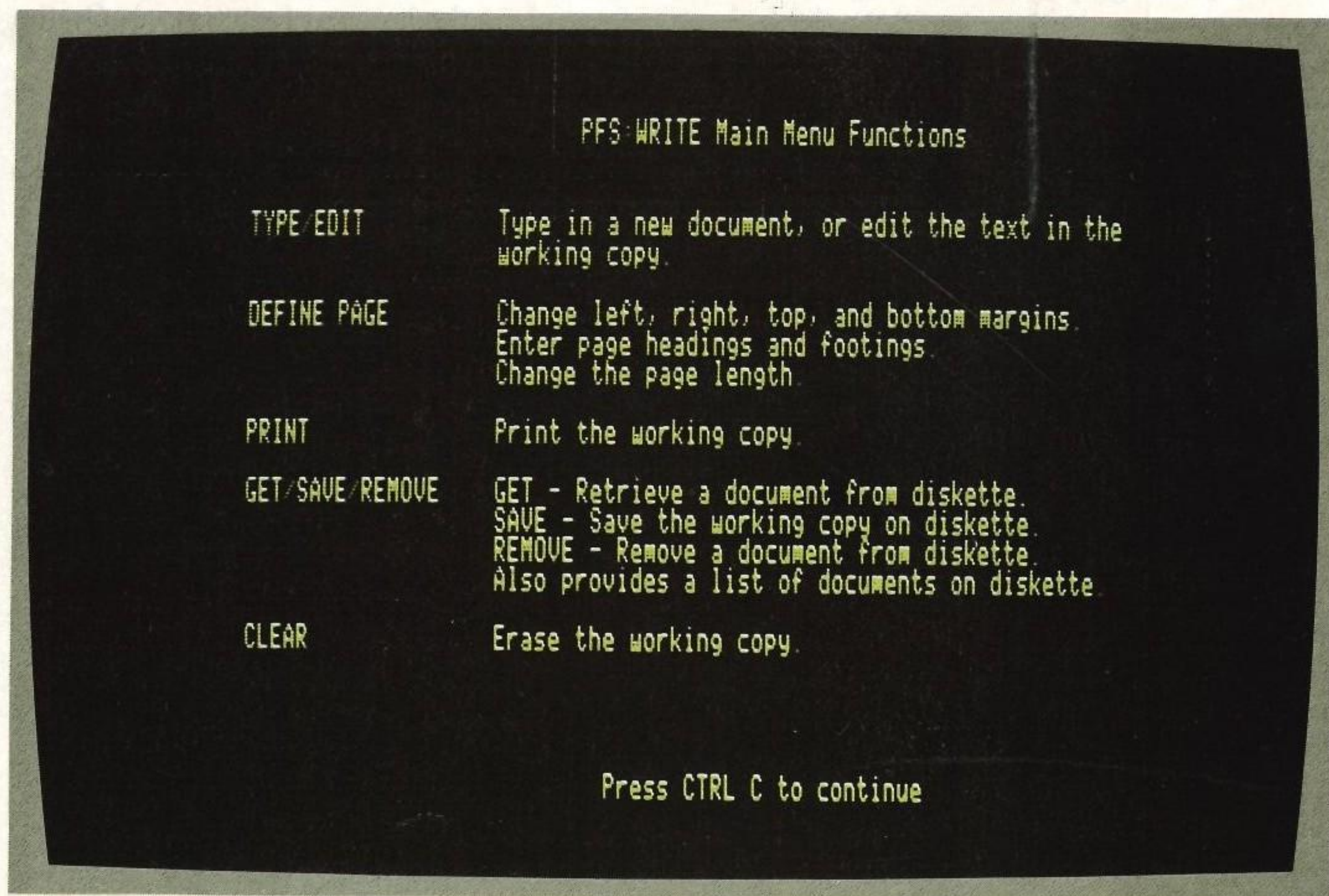
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PFS:Write's menu functions can help avoid errors.



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\$2500 worth in February, February's data would show \$5500 worth of sales.)

The save chart function, option four on the main menu, lets you save the chart that contains your graph. If you try to save a chart under a name that's already been used, the program will warn you: "Selected chart about to be replaced. Press Esc to abandon this operation. Press ctrl-C to continue."

The fifth main menu option, get/remove chart, shows you how to retrieve saved charts or remove them from the disk.

And the print/plot function, the sixth menu selection, lets you send your charts to a printer or a plotter. You'll name the kind of equipment you have from a menu which lists the different machines PFS:Graph supports.

You'll decide if you want a listing of your X and Y data along with your graph. Past that, you have the option of printing the chart in normal size—approximately 3" by 4"—or in an expanded size. Expanded, the program will rotate the chart and enlarge it to fill an 8 1/2" by 11" page.

Once all that's decided, press control-C to continue. Graph will print a copy of your chart, made to order.

PFS:WRITE

PFS:Write is a word processing program that's designed to be powerful enough to meet the average person's writing needs, yet uncomplicated and easy to learn. With just a few keystrokes, you can make insertions and deletions, create boldface type and move whole blocks of text. The program will also do underlining, set tabs and print envelopes.

Write's editing screen resembles a standard sheet of paper inserted into a typewriter. On the bottom is the "bar" that holds the "paper." It is 80 columns across, just as your printed copy will be.

PFS:Write is built on the principle of "what you see is what you get." You'll see on-screen exactly the format you'll see once the copy is printed, even down to the page breaks. There'll be no surprises when you make a final printout.

Again, you'll be instructed to copy the program diskette. On-screen prompts will guide you through the process. When that's completed, pressing open apple-control-reset reboots PFS:Write and brings you to the main menu.

You'll have five options: type/edit,

*PFS:Write is a
word processing
program designed to be
powerful enough to
meet the average
person's needs.*

where you'll actually do your writing; define page, which lets you specify your margins as well as any headings or footings; print, which gives you formatting options such as single or double spacing and number of copies to print; get/save/remove, which helps you manage the documents you've stored on disk; and clear, which simply clears your memory buffer in preparation for another document.

There are two ways to get acquainted with Write. You can copy the sample program that comes with the package and practice your editing commands on the letters that have already been created, or you can plunge right into the type/edit mode on your own by choosing the first option on the menu. PFS makes this a viable option with the on-screen help that's available. Throughout the program, open apple H will bring you help.

Once you've selected type/edit, hitting control-C, rather than return will get the program moving. The screen you see may be a bit disconcerting at first if you're accustomed to other word processors.

The blinking cursor is not on the first line in the upper left corner of the screen as you might expect. It is about an inch and a half down from the top and an inch or so in from the left margin. This is designed, again, to remind you of that page in the typewriter. Since you never start in the absolute top left-hand corner of the paper when you're typing (you always leave a margin), the screen reflects that.

Documents will look on the screen the way they'll appear when printed, except for one difference. On your monitor, you can view only 22 lines at one time, although the actual printed copy will be formatted in full pages. As you type, PFS:Write will signify a page break with

a horizontal line across the screen.

On the bottom of the edit screen, the page and line number appear on a status line. They are continually updated to show your current cursor position. The percentage of the file's memory you've used is also noted.

At this point, you're faced with a blank screen, a blinking cursor partway down, and a status line at the bottom. The next logical step is to try out the help function. Pressing open apple H when you're in edit mode brings you a list of editing functions and cursor movement commands.

After perusing these, press control-C to return to the editing screen. Then, simply begin to type. As you reach the end of a line, there's no need to press return—just keep typing. The text automatically wraps around to the next line at an appropriate point. At the end of a line, the copy moves up one line, just as a page in a typewriter advances after a carriage return. As you type, a little marker moves across the bottom of the screen to show where you are.

When you've finished typing, you can stay in the type/edit mode and begin making changes. Learning to edit your work should be especially simple once you're familiar with the other PFS programs.

Control-R, for example, removes a character or a labeled block. Control-W deletes a word. The attempt is made throughout to be consistent—even at the risk of looking a bit silly. Since control-I is not available, the documentation states, control-Y signifies Yinsert.

Moving a block of text is one of the most complex operations of the entire program. First, the text to be moved must be labeled. That's done by pressing control-L, and hitting return for each of the lines to be moved. The line of text you are moving will be highlighted so you're sure you've got what you wanted. Next, press control-R to remove the lines from that location. Write will put them in the block buffer. Finally, move the cursor to the new location, insert the number of lines you'll need for the new text, then press control-D to duplicate the contents of the block buffer.

Along with basic commands that let you move around the document easily—to the beginning or end of a line, to the previous screen, to the next screen, to the beginning or end of a document—PFS:Write provides some special edi-

ting capabilities. Control-B lets you print text in boldface type. Control — allows for underlining. Control-T lets you instantly set or unset your tabs, either in standard columns or decimally (which means numerical columns automatically line up with decimal points evenly).

PFS:Write also offers a search command which can be used in a number of ways. Pressing control-S (for search, naturally) brings a prompt which asks for three pieces of information: what you want to search for, what you want to replace the word with, and if you want the replacement to be manual or automatic.

If you simply want to locate the first appearance of a particular word or phrase, you can search for the word(s) and leave the replace with item blank. If you want to replace the word wherever it occurs, you can specify a replacement word and choose to replace it manually (rather than automatically). If you want the program to replace the original word globally, throughout the document (you've just discovered you misspelled a word, for example), you can specify a replacement and instruct the program to change it automatically.

Combining the search capability with wild card characters allows you to look for partial words or phrases. If you want to locate every word in your text that

ends in "ing," for example, you can simply insert ".ing" where the screen asks what you want to search for. Control-C begins the search.

The search can also be used to determine the number of words in a document. To implement this function, return the cursor to the beginning of the document (control-G for go, then B for beginning), then press control-S for search. The screen will display the search for prompt, where you'll enter "..." so the program will search for each word in the document. Then you'll set the auto/manual option to A, and watch Write count every word and display that number.

Before printing or saving, you should take a quick trip to option two on the main menu, define page. This is your chance to name your left and right, top and bottom margins and the page length you want. The defaults are set up for standard pages—six lines for the top and bottom margins, the left margin at a setting of 10, the right margin at a setting of 70, and 66 lines on a page.

Any headings or footings you want on each page are also inserted here. You have up to two lines for each. The program will automatically center these on each page.

If you want your pages numbered, Write has the simplest method for doing this. Whenever the program finds a number in the footing, it assumes it is

the page number, and increases it one for each new page. Entering "..." next to the footing category will begin working on another document. If you choose to clear when there is unsaved text in memory, Write again displays its safety-consciousness. "Warning," the screen cautions. "Working copy about to be cleared. Latest changes not saved. Press Esc to abandon this operation. Press ctrl-C to continue."

Once you've defined your page, control-C will bring you back to the main menu. You can then proceed to option three, the print functions.

PFS:Write gives you many formatting choices. You can print selected pages from your document; pause printing operations between pages; print any number of copies; single or double space; space for envelopes; and specify how far to indent. There are also opportunities to state whether you are incorporating graphs from PFS:Graph or information from PFS:File.

After you've decided on those items, the main menu's fourth option, the save/remove function, is where you save your document, or retrieve it if it already been saved. You simply name your document. The program does the rest.

If you try to save your document something other than a properly formatted disk, Write can take care of it too. The program gives you the option of creating a formatted disk right then and there.

Finally, the last function PFS:Write can perform is clear, which erases the context in the memory buffer so you can begin working on another document. If you choose to clear when there is unsaved text in memory, Write again displays its safety-consciousness. "Warning," the screen cautions. "Working copy about to be cleared. Latest changes not saved. Press Esc to abandon this operation. Press ctrl-C to continue."

A FAMILY PORTRAIT

Perhaps the most valuable feature of the PFS family of products is their ability to work with each other, providing the user with what is in effect an integrated package.

A report created in Write, for example, can contain graphs and charts from Graph, and data from File. Names and addresses from File can be merged with letters created in Write to make a simple and efficient mailing list. Let's take a brief look at how this is done.

Say you're writing a letter to a client. In the middle of the letter, you want to include a bar chart of some of your company's most recent sales figures. It's an easy process with PFS:Write and PFS:Graph.

You begin by booting up the PFS:Graph disk and creating your graph. If you need to create the graph from scratch, select option one from the menu, get/edit data. Tell the program you were entering information straight from the keyboard, then add your X and Y values and name your X data format (letters, numbers or dates).

(If the data is already on a PFS:File form, instruct the program to "get PFS file," insert the File disk, and press control-C. Then fill in the retrieve specifications form to determine which records you want to include, specify which items in each form you wanted as your X and Y values, and name your X data format.)

From there, you press control-C, which causes the data to be stored in memory. Then you choose option three from the main menu to define your chart. Specify you want a bar chart, give the chart a title if you wish, and decide on any other physical aspects of the chart. Next, press control-C again, choose item six (print chart) to ensure the graph is in the proper format, and press control-C to print.

The most valuable feature of the PFS family is the ability to work together. The user gets an integrated package.

Once that's finished, simply select the fourth option on the main menu, save chart, insert a Write-formatted diskette, enter the chart name and press control-C. Now your graph is ready to be inserted into your Write document.

Back to Write. You've written your letter and decided where you want to insert the graph. While you're still in the type/edit mode (selection one on the main menu), all you need to do is type the following command at the location in your document where you want the chart to be printed: *Graph chartname*. The first asterisk determines the placement of the chart.

When you are ready to print, head for the print functions (the third menu option), and enter Y (yes) next to the "include PFS graph" item. Press control-C, and Write displays a special menu asking which printer you are using. The program can only print a chart as part of a document if you are using one of the following graphics printers: Epson, Apple Dot Matrix, NEC, C. Itoh, IDS or Okidata.

Specify the printer you're using, press control-C, and the letter, complete with graph, will appear. The chart will measure approximately 3 1/2" by 4 1/2", and will occupy 18 lines of the page. Write's manual suggests you leave at least 18 blank lines in the document to accommodate the chart, so the page breaks shown on-screen will correspond to the page breaks of the printed document.

You can print as many charts per document as you wish. Simply enter the *Graph chartname* command wherever you want the charts to appear. As Write reaches each graph command, it will look for the chart on the document diskette in Drive 2.

Now let's say you've decided to send the letter to more than one customer.

You want all your customers with ZIP codes that start with "9" to receive it. Assuming you have a list of people and their addresses stored in a PFS file, regardless of what other information is stored for these people, you can use PFS:File and PFS:Write to print individual letters for any people on the list.

Heading back to PFS:Write and the letter you've just created, you need to make a few alterations. The body of the letter will remain the same, but you must identify each piece of information that will be read from the PFS file—in this case, name, address, city, state and ZIP code.

You do that by entering an asterisk, an item identifier, then another asterisk. It would look something like this:

```
August 15, 1984
*Name*
*Address*
*City*, *State* *ZIP code*
Dear *Name*,
```

Once you've done that, you're ready to print your letters. Return to the main menu, select option three to print, and press control-C. You'll enter Y next to "include PFS graph," and enter the name of your PFS file next to "PFS file name." If you want to use single sheet stationery, enter Y for "pause between pages." After you've filled in all the options, insert the disk that contains the PFS file in Drive 2 and press control-C to continue.

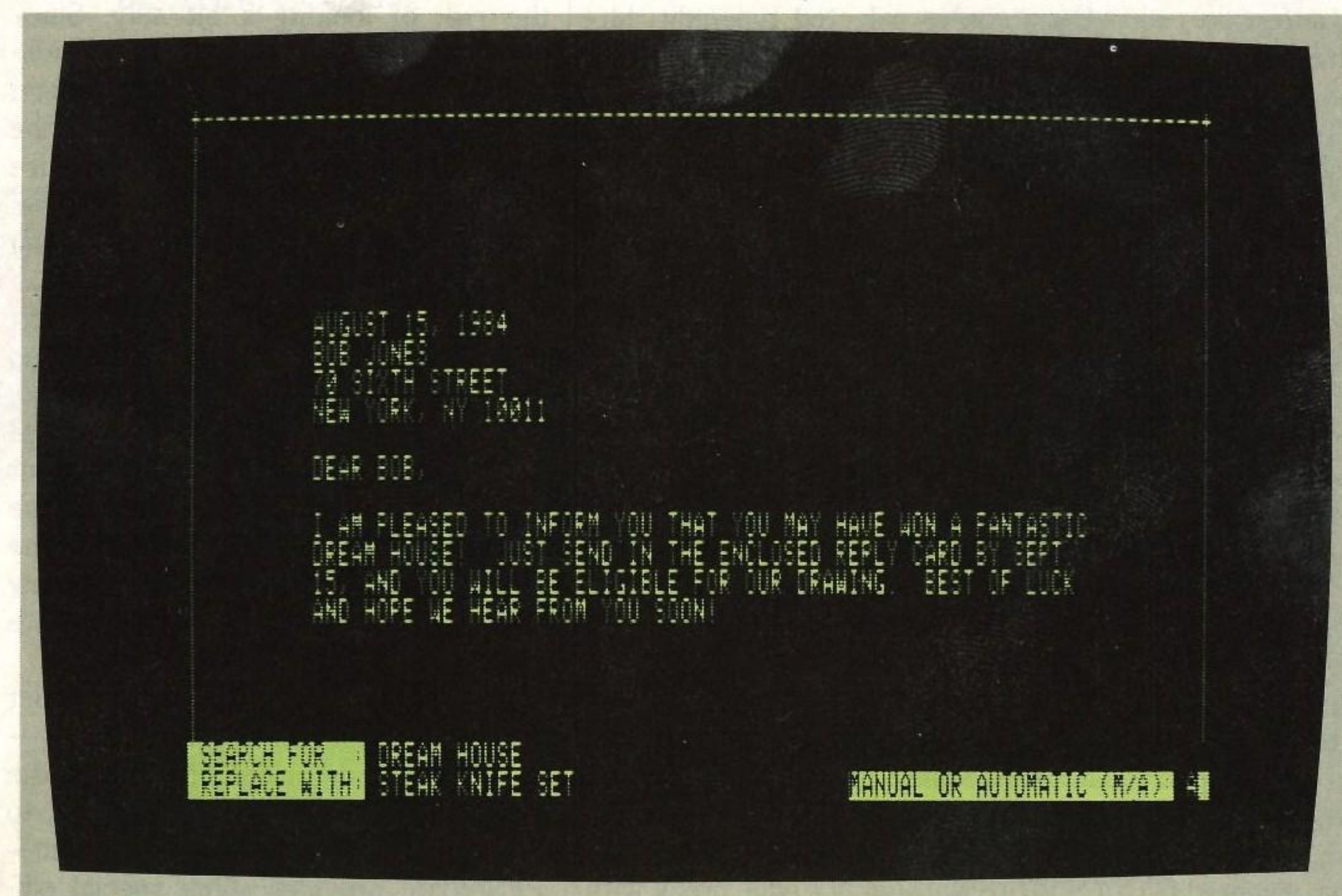
Here, Write will display the retrieve specifications form. This is where you'll tell the program you want to send letters to only those addresses whose ZIP codes begin with "9." When the blank form appears, tab down to the ZIP code item, type "9.." and then press control-C. Write asks you to position the paper in your printer, then begins to print your first letter.

Mailing labels can later be printed with either Write or File. And that's all there is to using the programs together.

The bottom line of all this is the PFS family gives you "cafeteria-style" integration. You can pick and choose which functions you need and pass up the rest. What you'll end up with is a group of individual products that, taken together, give you the benefits of an integrated system.

—Lynn Walker

For more information circle 117 on the reader's service card.



PFS:Write's search feature allows either manual or automatic replacement.



Herbie Briggs has just destroyed the myth that all floppy discs are created equal.

They seem equal. Until you look at the seams.

That's where equality ends.

Most companies seal their discs with a spot here, a spot there. Leaving most of each seam not sealed at all.

Sooner or later, the seams might do what comes naturally: they bulge. Warp. Pucker. Open up.

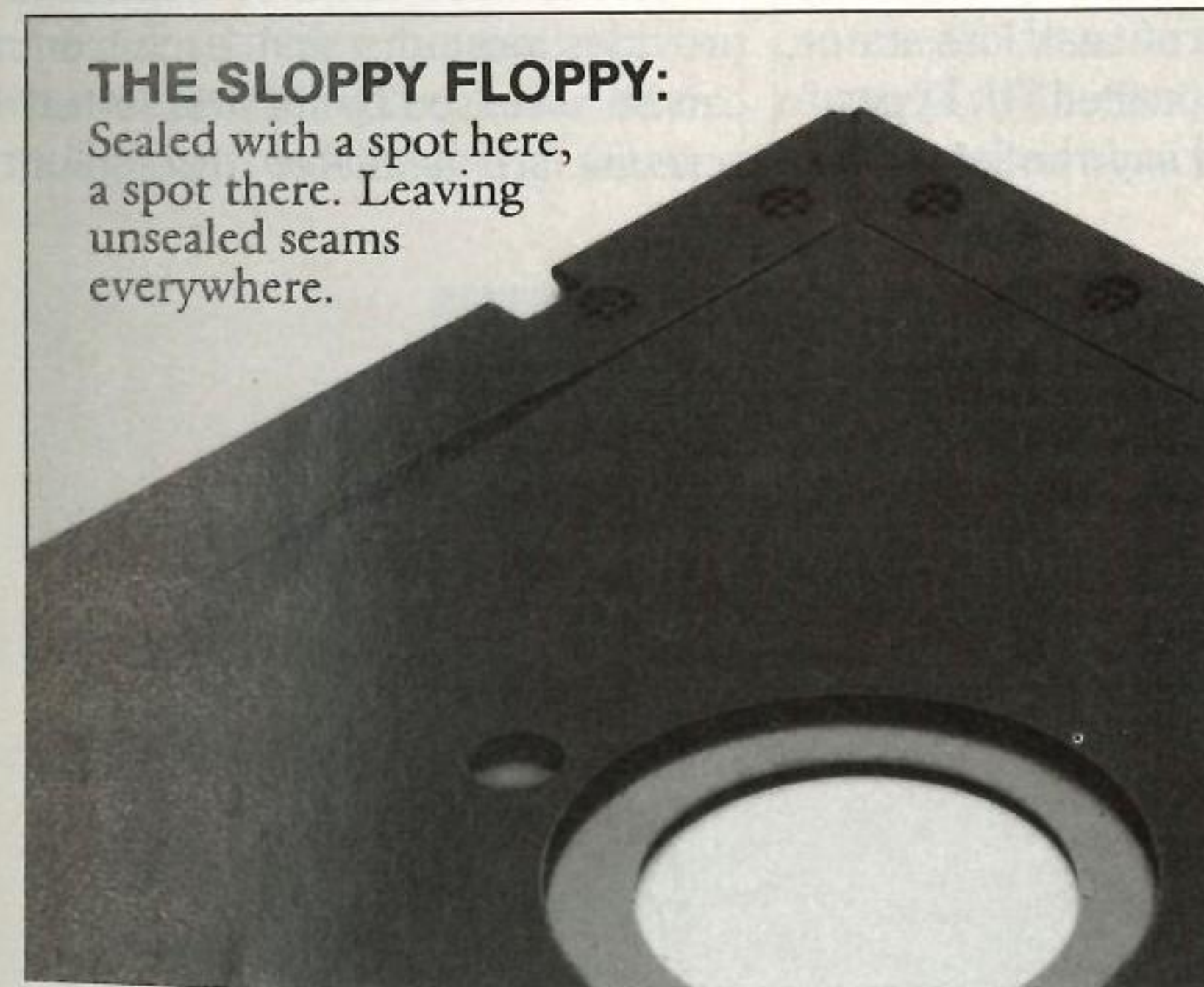
Pens, pencils, fingernails—even a four-year-old's, like Herbie—can catch and snag in those wide open spaces.

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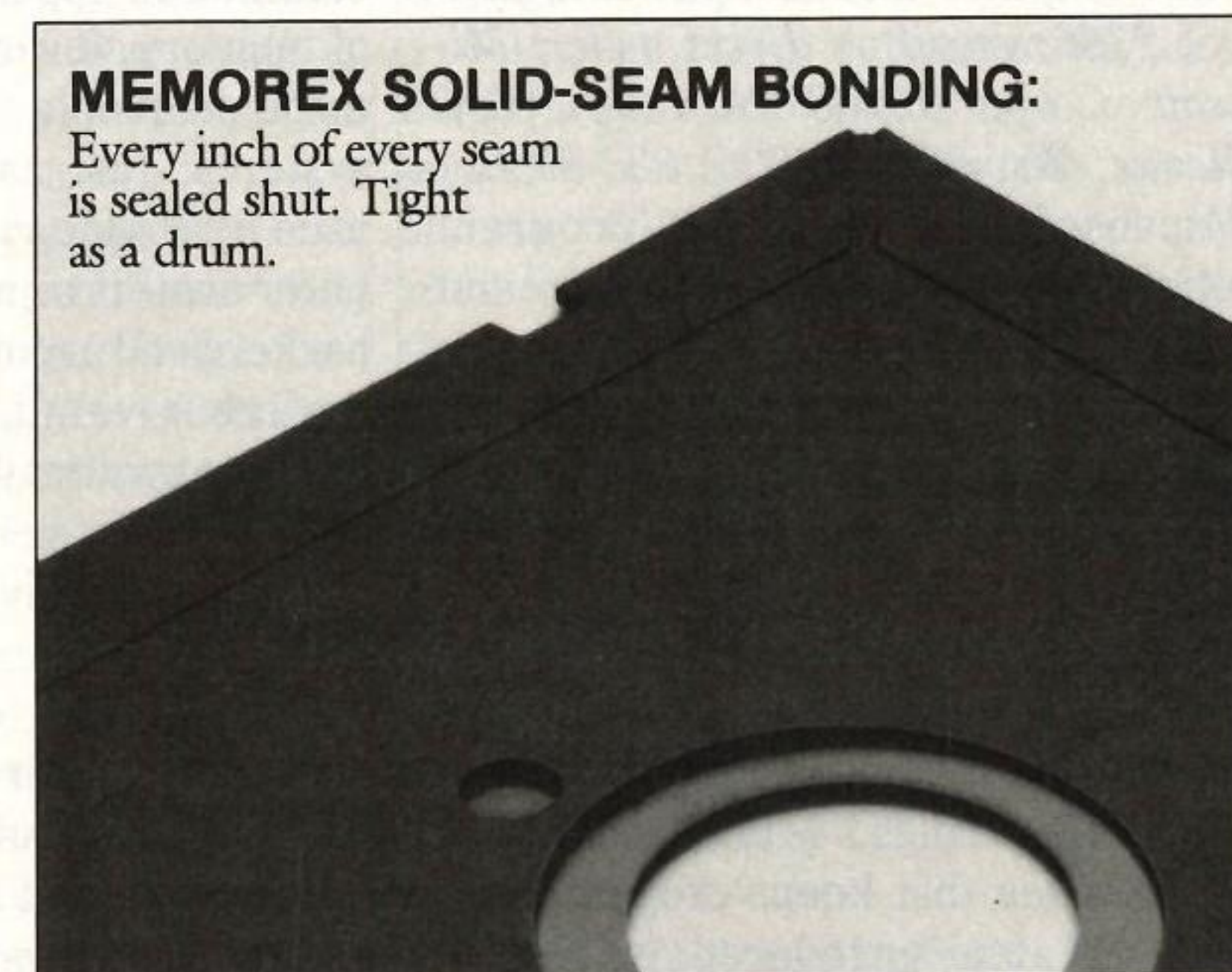
Solid-Seam Bonding seals shut every inch of every seam of every Memorex® floppy disc. Tight as a drum. That makes the Memorex

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To resist bulging, warping, puckering, or opening up.

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Every inch of every seam is sealed shut. Tight as a drum.



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The Many Roles Of Multiplan

Many spreadsheet programs offer powerful functions—what is surprising about Multiplan is its ability to offer power in a versatile, accessible package

■ **MULTIPLAN** runs on Apple II series, III, Macintosh; CP/M; IBM Personal Computer and compatibles; MS-DOS; \$195; retail or direct order; Microsoft Corp., 10700 Northup Way, Bellevue, WA 98004; (206) 828-8080.

Microsoft's spreadsheet program Multiplan is looking like a successful and familiar Hollywood character actor these days. Certainly, the software "studio" is filled with a number of younger and potentially more glamorous superstars. These newcomers are gobbling up publicity in a grab for the public's ardor. Still, when one takes a hard, cold look at who is actually getting the starring roles, Multiplan is the veteran name that keeps cropping up.

When it was introduced two years ago, Multiplan was heralded as one of the "second generation" spreadsheet programs. It quickly became one of the most popular programs for personal

computer users, and now, there is still more than one reason to think that it will continue to appeal. It only requires 64k of memory, for one thing, and has been made available on a wide variety of systems. Just as important, it can be used by a wide variety of personal computer owners as well, from sophisticated hackers and accountants to spreadsheet novices. Overall, Multiplan can be the ticket to a variety of personal computing applications, yet it does not require weeks of intensive work to begin paying dividends.

For example, consider the following case study. Over the last few years my wife, Jennifer, has invested a few thousand dollars and a few thousand mostly frustrating hours in an attempt to run a home-based, part-time word processing business. The 1983 profit and loss statement for the venture, called "JJ Types," was disappointing, to say the least. We

fear that if we fail to interpret the lessons therein, the business will soon fail. Enter Multiplan with the initial promise to get the business' existing records in a usable, readable form. Beyond that, it is a precise method for identifying the most important variable in the marketing strategy for JJ Types is advertising. Here, Multiplan will be used to gauge the past performance in order to project some guidance for future advertising.

Even without reference to its manual, there is little challenge in starting work with Multiplan for anyone slightly familiar with any spreadsheet. After several rows in column 1 and hits A for loading the program with the boot disk Alpha or text mode. Had the entry and inserting the system disk, the first cell appears with all the major commands listed in menu form right below the worksheet area. A command line prompts "receipts" for R1C3. Without providing prompts and each command can be accessed by its first letter. Here down two rows using the down direction key. This leaves the label in place.

program with an in-context explanation of the command or subcommand that is operational when assistance is requested. The functions used in Multiplan formulas, sum for example, are usually identified the same way as in VisiCalc formulas.

Square one in Multiplan terms is cell R1C1. Numbers, both the columns and rows, are one of the things done differently in Multiplan. Most other spreadsheets number the rows but have letters designating the columns. Referring to a cell as R3C5 rather than E3 seems at first glance to be a more convoluted technique, and it does make for some intimidating looking formulas later on. Still, it is a precise method for identifying the cells, and the way default fields are set up, one is rarely called upon to type out four characters to designate one particular Multiplan cell.

Jennifer has kept a monthly ledger of her income and expenses and, when it comes time to enter this data, Multiplan makes it rather easy to organize these work with Multiplan for anyone slightly familiar with any spreadsheet. After several rows in column 1 and hits A for loading the program with the boot disk Alpha or text mode. Had the entry and inserting the system disk, the first cell appears with all the major commands listed in menu form right below the worksheet area. A command line prompts "receipts" for R1C3. Without providing prompts and each command can be accessed by its first letter. Here down two rows using the down direction key. This leaves the label in place.

At R1C5 she enter "expenses." Since these are the only kinds of figures being entered for the moment, Jennifer can now start putting in column headings.

Column headings are designated for each month plus one for a "total" in column 14 (the months of the year run from columns 2 to 13). Now it is time to start entering the figures from JJ Type's records. The cursor is placed at R3C2, the intersection of receipts and January. It is not necessary to switch over from text to numerical mode. While headings were being entered, the command line prompt asked for the entry of text or a value after each cell. As long as the figure being entered doesn't begin with a letter, it will be accepted as a number or formula.

Jennifer's bookkeeping system has consisted of entering expenditures and gross receipts in her paper ledger as they occur. Once a month she totals her receipts and expenses, keeping track of several subcategories of expenses such as costs for advertising and supplies. So she enters monthly figures for receipts and expenses—without the dollar sign, and for dollar figures that are round numbers, such as \$29, the decimal point and following zeros are also ignored.

With Multiplan, Jennifer can also check her calculations for total annual profits. It will save her time in the long run to have a formula for totaling the 12 months rather than having to type in her

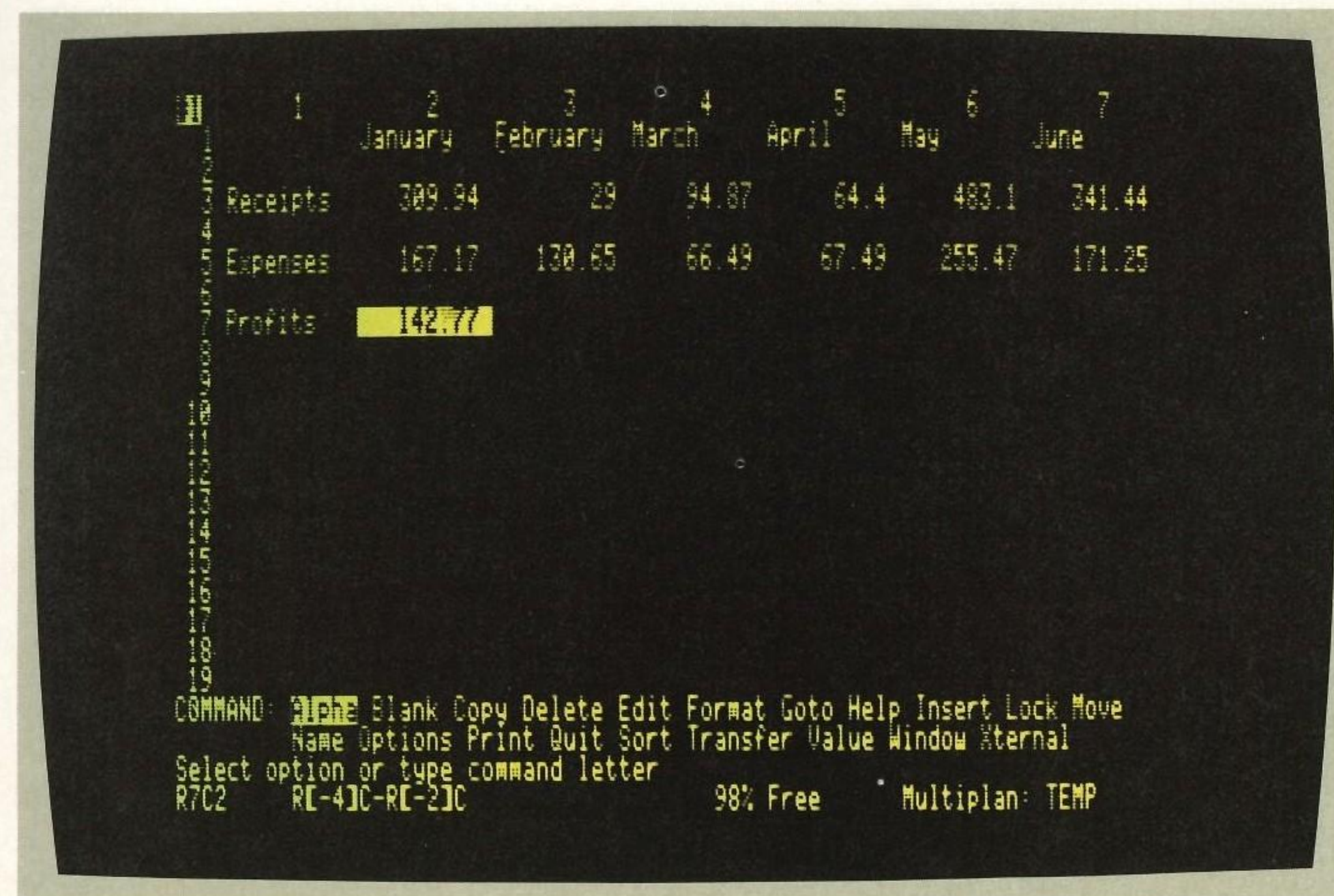
totals. The cursor is positioned at R3C14, the intersection of "receipts" and "total." An equals sign is typed to indicate that a formula is about to be entered. Creating the formula itself is as easy as visualizing it. Since Jennifer wants to add, she types the word "SUM" and an open parenthesis: "(". She could simply type the cell numbers to be added, close the parentheses and hit return to get the formula. But there is a better way.

Using the direction key, the cursor is moved all the way over to January receipts at cell R3C2. This is the first of the figures to be added, so she types in a colon. The cursor automatically jumps all the way back to the "totals" column, and the status line below the screen shows "SUM(RC[-12]:". The colon is used to indicate the sequence between the cells on either side of the colon. To identify the other cell she moves one to the right, under December and closes the parentheses. The number 2934.4 materializes as total receipts. That jibes with the figure Jennifer had calculated. This means that the formula on the status line, which now reads "SUM(RC[-12]:RC[-1])", is in fact what she wanted.

Multiplan automatically sets up a relative formula when the direction keys are used to create the value. A relative formula refers to cells by their position relative to the cell where the formula is



The Alpha, or text mode is about to be used to enter an expense figure here.



lodged. The formula in this case could essentially be translated as "add together the value of all cells from the cell 12 spaces to the right on this row to the cell one space to the right." An absolute formula could have been entered instead. In this case "SUM(R3C2:R3C13)", would have produced the same sum for total receipts. However, the reason that relative formulas are in many cases—such as this one—preferable to absolute ones, will soon be apparent.

To get a formula for calculating the total expenses of JJ Types, the previous process could be repeated two cells down at R5C14. There's an easier way, however. A copy of the formula that was just created will serve equally well for expenses and for receipts. This is done by escaping to the main menu, typing "C" for the copy function, and choosing "from" out of the list of subcommands presented. If the cursor has not been moved from the total receipts cell, that will be the default listing for both the cell being copied and the cell in which the formula is being replicated. The first default is accepted by tabbing to the "copy to" field. Moving the cursor down two cells changes the other field.

Since it is easy enough to create and copy a formula, Jennifer can easily get a look at how profits varied from month to

month. She can go back to January fairly quickly by hitting the home key (control Q for the Apple IIe) and then moving the cursor down to cell R7C1. Here she types the word "profits" and moves to the next cell on the right. Profits, of course, are revenues minus expenses, a calculation. So, Jennifer hits the equals sign and uses the arrow key to go up to January receipts. She hits the minus sign, goes up to January expenses and presses return. That's all there is to it. Jennifer netted \$142.77 that month. Now she will find out if that was one of the bad months—or a good one by comparison.

To find out the awful truth, the formula is simply copied 12 more times along row 7. That could prove wearisome if it had to be done one step at a time. Fortunately, however, this comparison can be done in one fell swoop. Jennifer calls for the copy function again, but this time she opts for the copy "right" subcommand. The default suggests making just one copy to the right, so she changes that to ask for 12 copies. Other than that, everything is already set. She depresses return. Almost immediately, the monthly profits begin to flash.

These figures can easily be made into dollar amounts. To do this, Jennifer opts for the "format" command on the main menu, choosing the "default" subcommand and then selecting the "cells" response. Here, reference to the manual

comes in handy because Multiplan is confusing in the structure of its decision tree for formatting. Such alternatives as cells, default, width and options are offered at several levels. While they sound the same, these choices are not and they each affect a worksheet differently.

Before taking a more detailed look behind her income and expense figures, Jennifer decides it would be a good idea to save the work done thus far. Instead of "S" for save, she needs to use a "T" for transfer. This gives her load, save, clear, delete, options and rename functions for files. Now she can press "S" to get a field in which to name her file. Unfortunately, she has not collected this information in a usable manner, so "temp." Now, Jennifer will call it "JJTYPES."

In Jennifer's original ledger, she itemizes each month's expenses on one page and receipts are similarly listed on a following page. Most of her expenses fall into one of three broad categories: advertising, supplies such as paper and ribbon cartridges; operational costs relating to equipment, such as a typewriter; and telephone expenses. Jennifer gets her clients through advertising, personal referrals, friends and relatives, and notices on local bulletin boards. Using Multiplan, she decides to map a strategy to boost her advertising productivity.

She has run ads in three different

legge newspapers, generally trying to time them to coincide with term paper season. During the year which her spreadsheet is analyzing she also took out ads in several local phone directories which were distributed in April or May. She has done her best to keep track of which advertising source her customers came from, marking down a code letter in the margin the first time a new client appears in the ledger. Customers referred to her by previous customers are attributed to the ad which brought in the original client. Clearly that information offers some strong possibilities for analyzing and improving her marketing. Unfortunately, she has not collected this information in a usable manner, so somebody is in for some very tedious data entry.

First the subcategories for expenses, which shouldn't be too hard to enter since in most months only one or two checks account for the total. First she has to open up some extra lines under expenses for subcategories. This involves selecting the insert mode, choosing to add rows instead of columns, and filling in the information requested, in this case four lines inserted before row 7. When this is entered, the "Profits" label, which was on row 7, moves down to row 10. She can now enter labels for "Advertising," "Supplies" and "Equipment" in column 1, although she quickly discovers that advertising, at 11 characters, is 1 character too long for her col-

umn. Back into the format mode she goes, taking the width subcommand. To give herself plenty of room, she asks for 15 characters in column 1.

While she is formatting column 1, however, she might as well get the headings of the subcategories moved to the right of their respective cells to make it clear they are subsets of the overall expenses. From the format command she chooses "cells" this time, moves the cursor on the worksheet to the advertising heading in cell R7C1, types a colon and moves down two cells to R9C1. She then tabs over to put the command cursor in the alignment field, pressing "R" for right. She enters this format and the three headings are now flush right.

Even with computations and several anomalies uncovered in my wife's bookkeeping, it still only takes her about 15 minutes to fill in all 12 months for advertising, supplies and equipment. After copying the same formula she had used to total overall receipts and expenses, she decides it looks a little strange not to have her three subcategories add up to the total. Not wanting to go to all the trouble of adding up fees for babysitting and postage, she takes the easy way out by creating a fourth subcategory of miscellaneous expenses by formula. Inserting one more line, she labels the new row "Misc" and uses the direction key to

create her new formula in cell R10C2. Overall expenses minus advertising, supplies and equipment costs equals, naturally, miscellaneous expenses. As she copies the formula across the row, she reminds herself that "Misc" was for cosmetic purposes only. If she were to use those numbers in her what-if manipulations later on, they could cause her a lot of grief by giving her variables which would depend on each other.

She has enough totals now in column 14 that it gets hard to remember what each represents without seeing the labels back in column 1. This is easily taken care of, however, by using Multiplan's windowing commands.

The more she looks at it, the more certain she is that the only chance to save this business is to find the most effective way to spend advertising dollars. Once she breaks both costs and receipts down by publication, she'll be able to judge the overall effectiveness of each and look at what might be produced by alternative advertising strategies.

Jennifer tried to use Multiplan's sort command to eliminate the bother of switching from column to column while slotting entries for different publications. It seemed quite clever to simply type a code letter in the next column after each receipt figure to signify which ad had been responsible for the business. She could then sort on the second column to have her first column seg-

	8	9	10	11	12	13	14
	July	August	September	October	November	December	Total
1	\$127.75	\$260.50	\$289.80	\$132.30	\$178.55	\$622.75	\$2934.40
2	\$99.87	\$69.69	\$300.57	\$86.70	\$108.40	\$154.60	\$1678.35
3	\$27.88	\$190.81	(\$10.77)	\$45.60	\$70.15	\$468.15	\$1240.66
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
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18							
19							

COMMAND: **TEMP** Blank Copy Delete Edit Format Goto Help Insert Lock Move
Name Options Print Quit Sort Transfer Value Window Xternal
Select option or type command letter
R7C14 RC-4JC-RC-2JC 97% Free Multiplan: TEMP

Multiplan gives profits totals and lets you make month-by-month comparisons.

	8	9	10	11	12	13	14
	July	August	September	October	November	December	Total
1	\$127.75	\$260.50	\$289.80	\$132.30	\$178.55	\$622.75	\$2934.40
2	\$99.87	\$69.69	\$300.57	\$86.70	\$108.40	\$154.60	\$1678.35
3	\$27.88	\$190.81	(\$10.77)	\$45.60	\$70.15	\$468.15	\$1240.66
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COMMAND: **TEMP** Blank Copy Delete Edit Format Goto Help Insert Lock Move
Name Options Print Quit Sort Transfer Value Window Xternal
Select option or type command letter
R7C14 RC-4JC-RC-2JC 97% Free Multiplan: JJTYPES

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mented by publication. Then it would be easy to write formulas to add up each segment, which would give her the numbers she wanted. She thinks it worked, for that matter, but she will never know because instead of just totaling each segment of the column, she tried to first copy the segments to different parts of the spreadsheet and in the process inadvertently mixed the sorting. When she finally realized that her figures had gotten jumbled, she gave up trying to do it in exotic fashion and went back to using Multiplan calculator-style.

In the end she emerges from her trial somewhat the worse for wear but brandishing a 1983 total for receipts generated for the business by ads in each of three college newspapers and from the Yellow Pages. She has also calculated a column to show the year's advertising costs for each of the publications, which was really relatively simple to compile. These columns are widely separated, however, on a worksheet which has assumed monstrous proportions even after blanking out some of the hopelessly scrambled data. What is now needed is

to get these figures over to a clean slate.

Multiplan has a number of useful functions for relaying or even linking data between spreadsheet files under its external command. To utilize these she must also become familiar with the name command which allows her to give a cell or group of cells a name to use as an absolute reference to the cells in formulas or external operations. The four cells reflecting the revenue generated by each publication she calls "Adrev" and the four total bills from each she dubs "Adcosts." This is done by positioning the worksheet cursor at the first cell, typing an "N" to get into the name command, and then entering the name she wants to use.

Jennifer carefully saves the file once more before asking the transfer mode to clear a new spreadsheet. In column 1 she inserts a heading to call it "Pubs" under which she lists the four publications she used. The next column is labeled "Ad Costs," the third "Ad Revenues" and column 4 "Rev/Ad\$." Going to R2C2, she enters the external mode by escaping back to the main menu

and hitting the "X" key. Choosing "Copy," she is asked which sheet she wishes to copy from. She enters the name of her mammoth worksheet, tab once and enter "Adcosts." She is already positioned where the block of cells should start, so she tabs past that to the last field where by default the external command has her linking the sheets. She does not really want to do that since she does not plan to ever go back to the other worksheet if she can help it, so she hits the space bar to keep them from being linked. The four figures from the other worksheet emerge, and she follows the same procedure in column 3, bringing over the "Adrev" cells.

In column 4 she creates and copies down a formula to divide each cell in column 3 by the cell to the left in column 2. What materializes in column 4 is the amount of gross revenue produced, average by each dollar spent on an ad. The discrepancy between all three college papers as opposed to Yellow Pages is glaring—the ads in the phone book barely paid for themselves while the college papers reaped profits beyond expectation.

What would happen if she took the ratios in column 4 and applied them to her original worksheet, JJTYPES? She ought to be able to demonstrate some interesting hypothetical cases for which she might have happened in 1983 if she knew then what she knows now. She uses the name command once again to identify the four ratios in column 4, then saves her worksheet under the file name "Performance." Saving this sheet, she returns to JJTYPES.

Jennifer does not want to mess with the real 1983 figures themselves since they reflect a reality that sadly can't be changed. Instead, next to the totals for the year in column 14 she creates a what-if column which she calls "1983B." (When the alpha text mode is used, Multiplan treats it as a label and doesn't convert it into dollars.) In column 15 she lists her four publications again. The next column she labels "Ad Costs" again, but this time she just enters \$1 for each publication. Moving over the column she goes into external commands to copy her ratio block over from the performance file. In the last column she uses, column 20, she makes four copies of a formula multiplying ad costs by ratios for each publication. Since she

Here, expenses for advertising in phone books and college newspapers are listed.

\$1 listed now as costs, the formulas produce a duplicate of the ratio amount, but she can manipulate those figures as she likes. Here she also enters \$1178.31, the total revenue she brought in last year from sources other than advertising.

Going back to her 1983B column, Jennifer can now write a formula to give her a new total receipts figure at R3C15. She can just write an absolute reference here: SUM(R3:7C20). The figure that she gets, \$1212.60, is very low because it is based on the case of spending a total of \$4 on advertising for the year. Expenses are going to change somewhat as total sales go up and down. To take this into account she writes a formula for total expenses as a sum of its four subcategories. The advertising expense will come from the sum of column 18, so when Jennifer writes that formula, SUM(R3:6C18), she gets \$4. Supplies is a category that does change in proportion to the amount of business she is doing, so she uses the actual figures of 1983 to get what should be a fair proportion. The ratio of actual 1983 supplies expenses divided by 1983 receipts, if multiplied by her hypothetical 1983B receipts, will give her a value which will vary in proportion to total sales.

Equipment and miscellaneous expenses do not change significantly due to the amount of business, so Jennifer just types in the same figures she has in

	12	13	14	15	16
1	November	December	Total	1983B	
2	Receipts	\$179.55	\$622.75	\$2934.40	\$9750.32
3	Expenses	\$108.40	\$154.60	\$1678.75	\$3181.25
4	Advertising	\$72.50	\$39.50	\$438.62	\$1000.00
5	Supplies	\$11.50	\$61.06	\$405.21	\$1346.33
6	Equipment	\$11.50	\$21.28	\$565.21	\$565.21
7	Misc	\$12.55	\$32.76	\$269.15	\$269.15
8	Profits	\$70.15	\$468.15	\$1256.65	\$6569.07
9	17	18	19	20	21
10	3 Sundial	\$250.00	\$11.62	\$2905.50	
11	4 Bruin	\$250.00	\$12.19	\$3047.22	
12	5 Star	\$250.00	\$8.80	\$2200.00	
13	6 Phone Book	\$250.00	\$1.68	\$419.09	

COMMAND: [F1] Blank Copy Delete Edit Format Goto Help Insert Lock Move
Name Options Print Quit Sort Transfer Value Window Xternal
Select option or type command letter
R3C18 250 93% Free Multiplan JJTYPES

column 14 for the actual 1983 figures. This now allows her total expense formula to compute, obviously smaller than the real one, but still big enough to make a big dent in her slimmed down revenues. This can be confirmed by making one more copy of her profit formula down on row 12—\$206.69 in profits is definitely not going to cut it, so \$4 in advertising is the wrong approach.

She can, however, try as many different approaches now as she wants, in just a few seconds. Suppose she had not taken out any advertising in the phone book but had instead spent \$50 on each college paper? To find out what would have happened, Jennifer replaces each \$1 entry for the school papers with \$50 and put in zero for the phone book. Multiplan takes just a few seconds to recalculate each of these, and then gives her the new annual totals under 1983B: gross receipts of \$2809.02, just a little less than her actual take-in, but net profits of \$1436.60, almost \$200 more.

What if she had really gone all out and spent \$1,000 in advertising, which for her would have been a high-stakes gamble? She enters \$250 for each publication and discovers that she would have netted over \$6500. Now that's a lot more along the lines of what she had in mind for this part-time business, so perhaps she will have to consider a heavier

advertising budget. She could continue to test different hypotheses—to make that easier, she splits the screen again, vertically this time, at row 13. This allows her to move her what-if engine directly under the totals they affect.

It is altogether likely, of course, that my wife will find the "Rev/Ad\$" ratios on the performance sheet will not hold absolutely true for all ads she takes out in the future. She is bound to find ads she takes out in college papers at times other than peak term paper season less effective, for example. She will have to continue to keep track of the effectiveness of her advertising and update the performance worksheet, which is one of the reasons to link the ratios on that spreadsheet to the main JJ TYPES file. As she gets more information, it will be reflected on the JJ TYPES spreadsheet whenever she loads it.

There are many more commands and functions available in Multiplan for the serious spreadsheet user. Arithmetic, logical and special functions in the program include computing of standard deviation, true and false, table lookup and special text utilities. The newest versions of the the program, Multiplan 1.2 for the IBM Personal Computer and 1.07 for the Apple II family, have expanded financial functions and options for some systems which include color, 132-column displays and templates.

—Edward Foster

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■ TEST DRIVE/MUSIC CONSTRUCTION SET

Making Music On A Computer

Would-be composers and musicians can now use a personal computer to learn about, and write music

■ MUSIC CONSTRUCTION SET runs on Apple II, II Plus, IIe; all Atari series; Commodore 64; \$40; Electronic Arts, 2755 Campus Drive, San Mateo, CA 94303; (415) 571-7171.

Some people are fascinated by music, but know very little about it. The Music Construction Set, from Electronic Arts, is a software program designed to provide such people with a relatively painless way to learn about music, and even to write music, without the hours of practice required to learn an instrument.

Getting started with the Music Construction Set is easy. I ran the program on a Commodore 64, a computer I don't use much. Despite my unfamiliarity with the hardware, the program's documentation got me up and running with ease. Loading it takes a long time—more than two and a half minutes—but then this is a complex program, with a

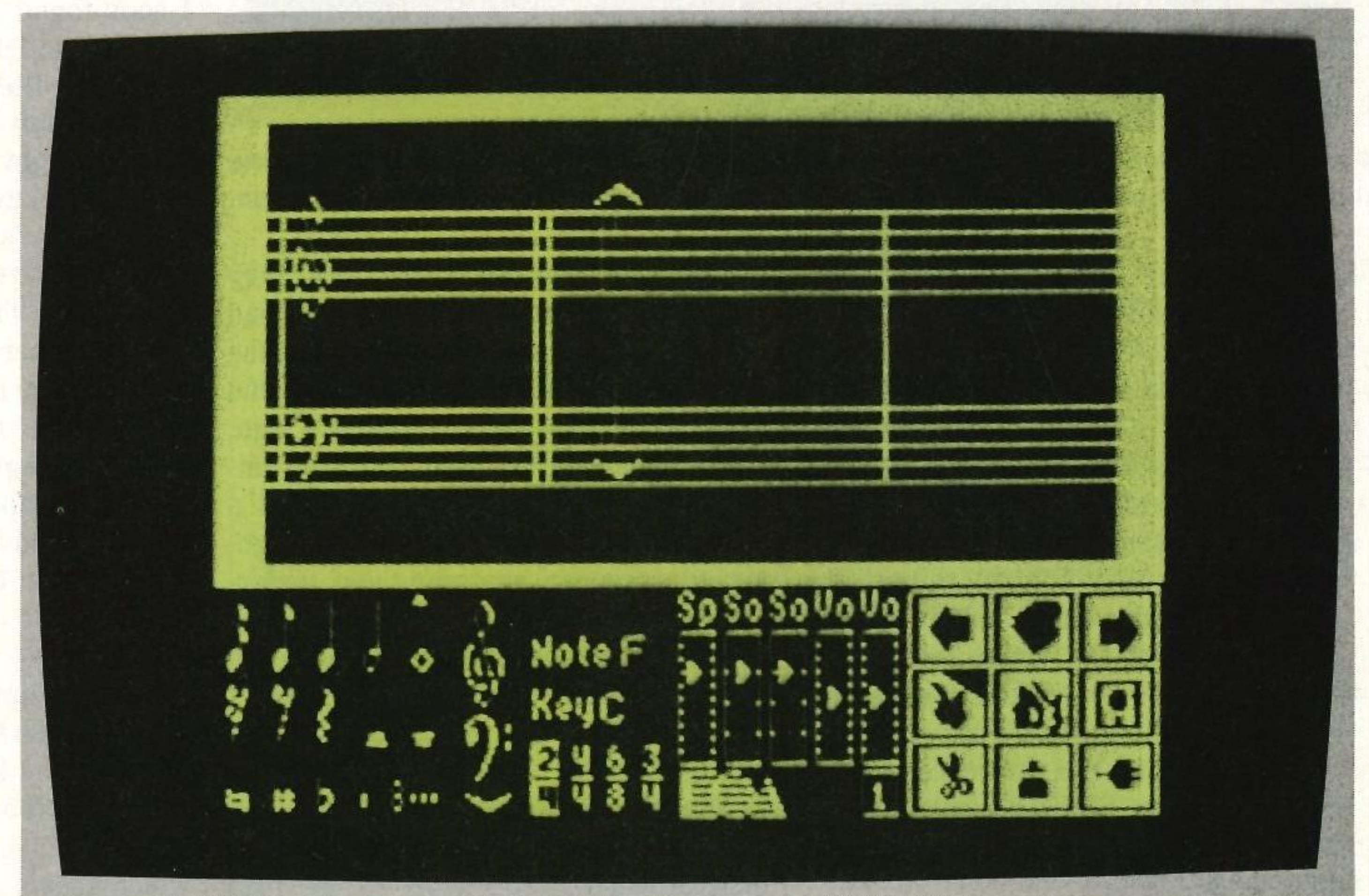
lot of capability.

Music Construction Set can use one of three input devices; the keyboard, a joystick or a KoalaPad digitizer. The fire button on a joystick or the push button on the KoalaPad serve as kinds of "Do It" buttons; I only had a keyboard, so any time I wanted to execute a function, the "button" that I pressed was the return key.

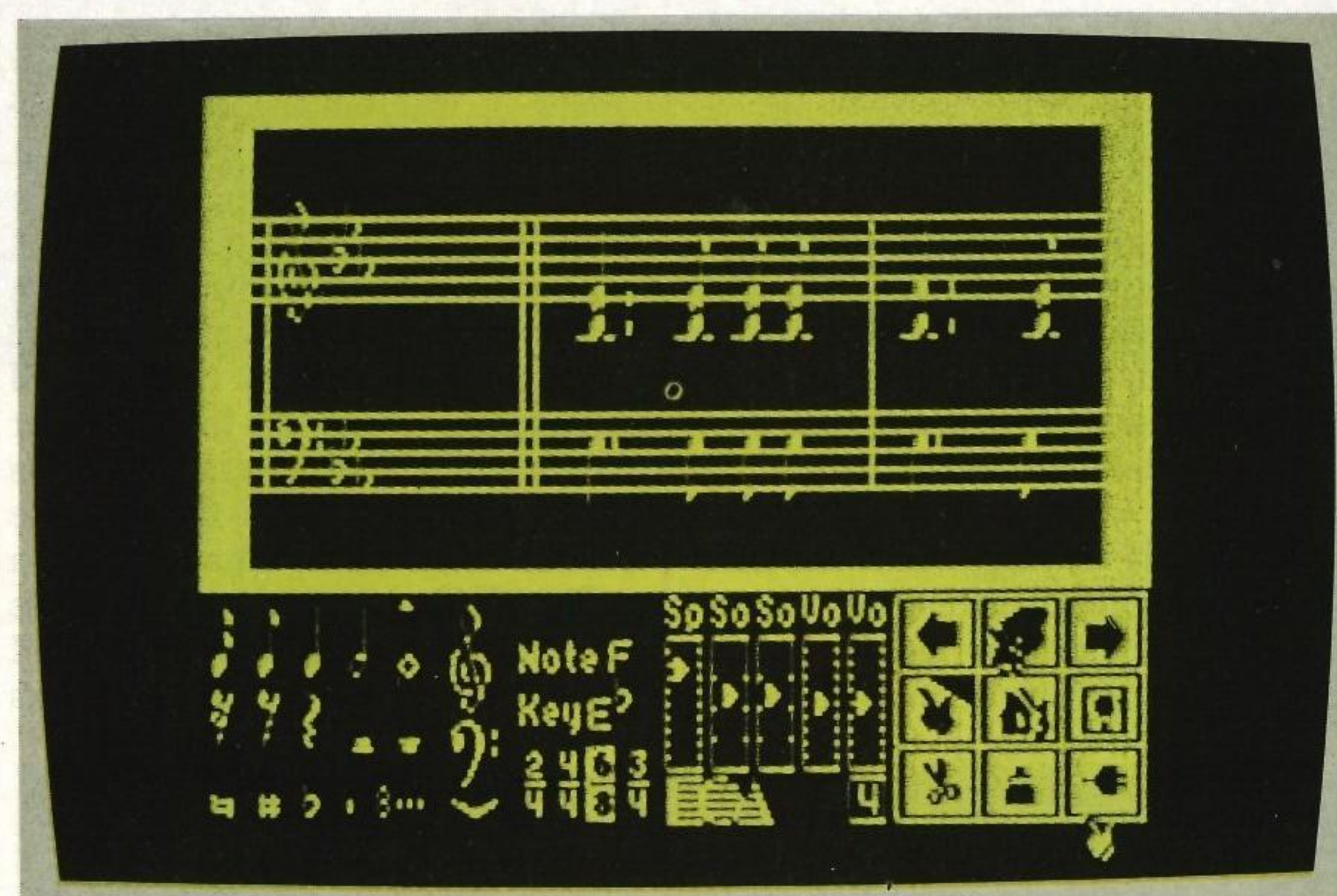
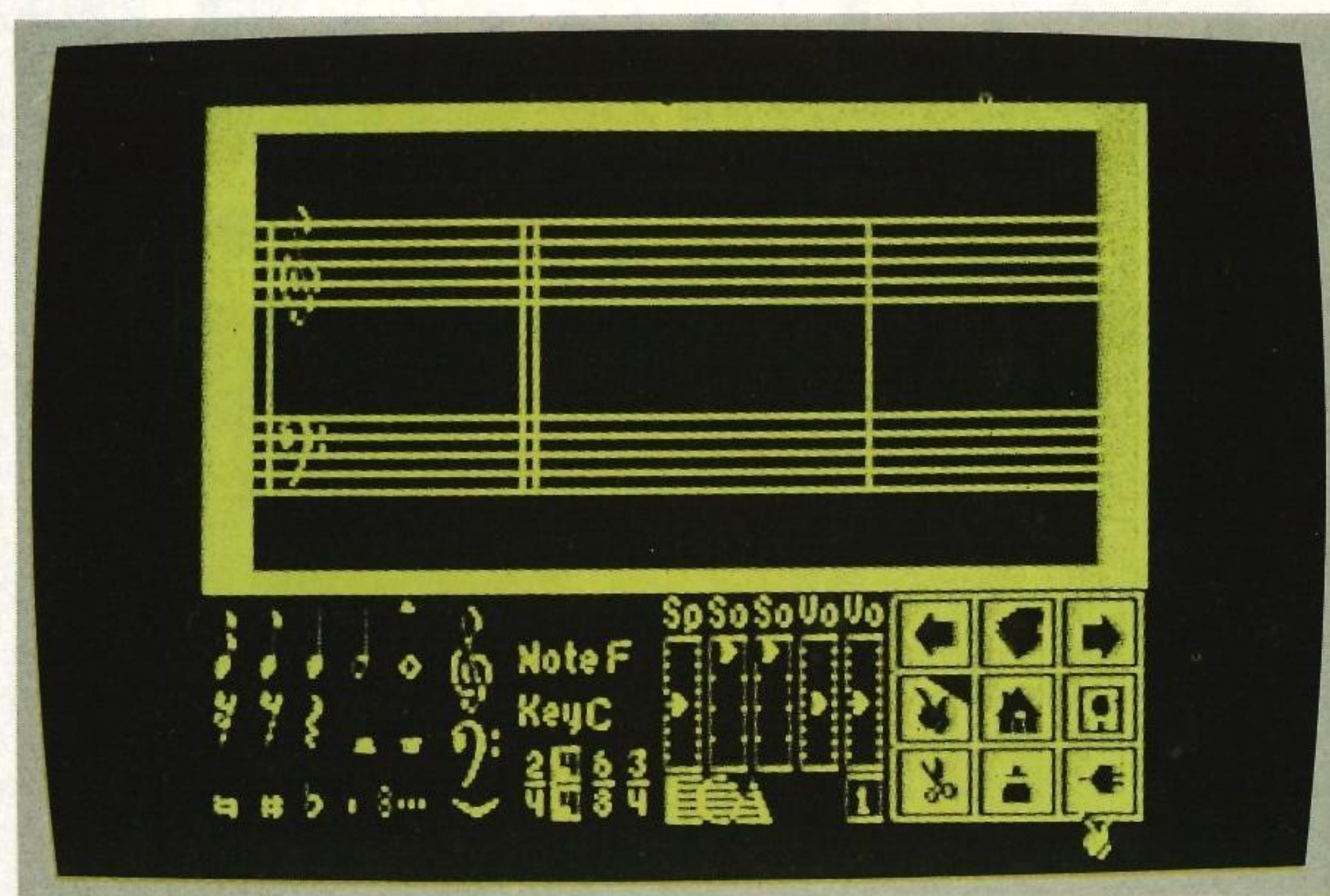
When the program is loaded, it presents what could be called the music-entry screen. This screen shows two musical staves, one on top of the other for bass and treble clef, with the clef signs already in place. Below the staves, on the left side of the screen, are symbols for notes from whole to 16th, and rests from whole to 16th. There are also symbols for sharps, flats and naturals, and for dots to extend the duration of a note. The bottom right-hand of the screen has a menu of icons to use in

moving things around on the screen. The icons are like those popularized by the Lisa and Macintosh computers. To pick a note, move the cursor to the symbol of the note and press the button. To place a note on the staff, move it into the staff and again press the button.

After program load, there are two options. If the computer is left alone after the music-entry screen appears, it will load a series of songs that have been saved on the program disk and play them one by one. When the button is pressed, the program turns control over to the user. The first time I loaded the program, I just left the computer alone and it played several songs. As the music played, the Commodore scrolled the musical notation past a small "play head." I could see the notes move as they were played. When I heard the sound produced, I was



The entry screen appears as soon as Music Construction Set loads.



Icons for making musical changes are presented in a menu display on the bottom right. The hand icon is used for dragging notes onto the staff.

amazed at the capabilities of the program. The music sounded great. So great, in fact, that my initial reaction was, "Can I do that too?"

So I tried. I pressed the button to make the program stop playing by itself and turn control over to me. It did, and I started fooling around with the on-screen icons that control things like playback speed, voices and so forth. I quickly botched the whole thing up. I couldn't make some functions work, even though I was sure I was following the directions on the reference card. It was frustrating. So I did what I usually do when things don't work right—I quit for a while.

Next day, I decided it was time to try to get a song onto the computer. I had a piece of sheet music around the house for a song that I'd prepared for a piano recital several—*several*—years ago. It's a semi-ragtime piece with an uncomplicated left-hand rhythm and a relatively complex melody. I wasn't going to compose anything, you understand. I was just going to copy a piece of music from paper into the computer. So before the demo songs began to play, I pressed return and got ready to go to work.

The piece I wanted to enter was in 2/4 time (two beats to a measure, a quarter note is one beat) so the first

thing to do, it seemed, was set the time signature.

To make any setting—in fact, to put anything into a musical piece with this program—pointing icons are used. These icons—there are three that actually point, and six more that do other things, like scroll the musical staff, cause the music to play or bring the music back to the start—are presented in a menu display on the bottom right of the screen. To change the time signature I first selected the hand icon, the major pointer. I moved it to the small box with 2/4 in it at the bottom of the screen. I pressed the button and the signature changed to 2/4, with that signature lighting up in inverse.

Once I set the signature, I needed to set the key in which the piece would be written. There is a small window at the bottom of the screen that displays the key. To change it, I pointed at the word "key" next to the window and pressed the button. Keys scrolled by. When I got to G, the key I wanted, I pressed the button again. But it was too late. I got A instead. So I had to go through this business a couple of times until I got the key right. Finally, I had G in the key window, and one sharp indicator in both the treble and bass staves.

Now, with the time signature and key selected, I was ready to go. I got the music sheet and started entering notes. I soon found that dragging notes from the bottom-left of the screen up to the staff with the keyboard cursor-control keys was a pain in the neck. It takes too long. It might be faster with a joystick, but with a keyboard it's no fun. Fortunately there's a section on the back of the reference card entitled "keyboard shortcuts." This section explains that when the user places the cursor/pointer where a note is to be put and presses an appropriate number (1 gets a 16th note, 2 an eighth note and so forth) the note will appear where the cursor is pointing, and it will sound the appropriate tone for that line or space on the staff. That's the method I used from then on.

I put the notes for the first two measures of melody into the staff and then tried to play the melody. To do that, I pressed H (home) to bring the cursor to the center of the cursor-menu icons, which shows as a small house, signify-

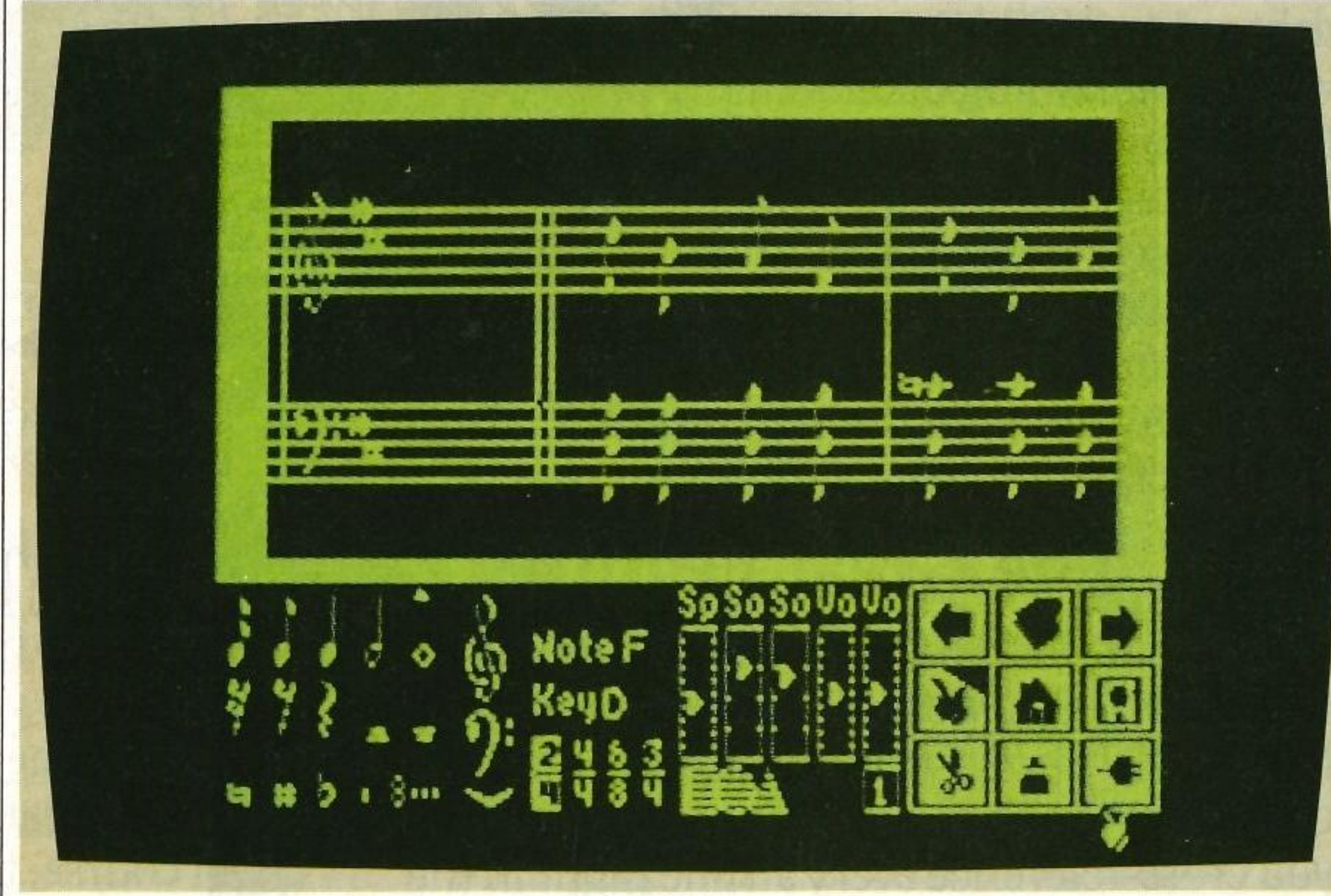
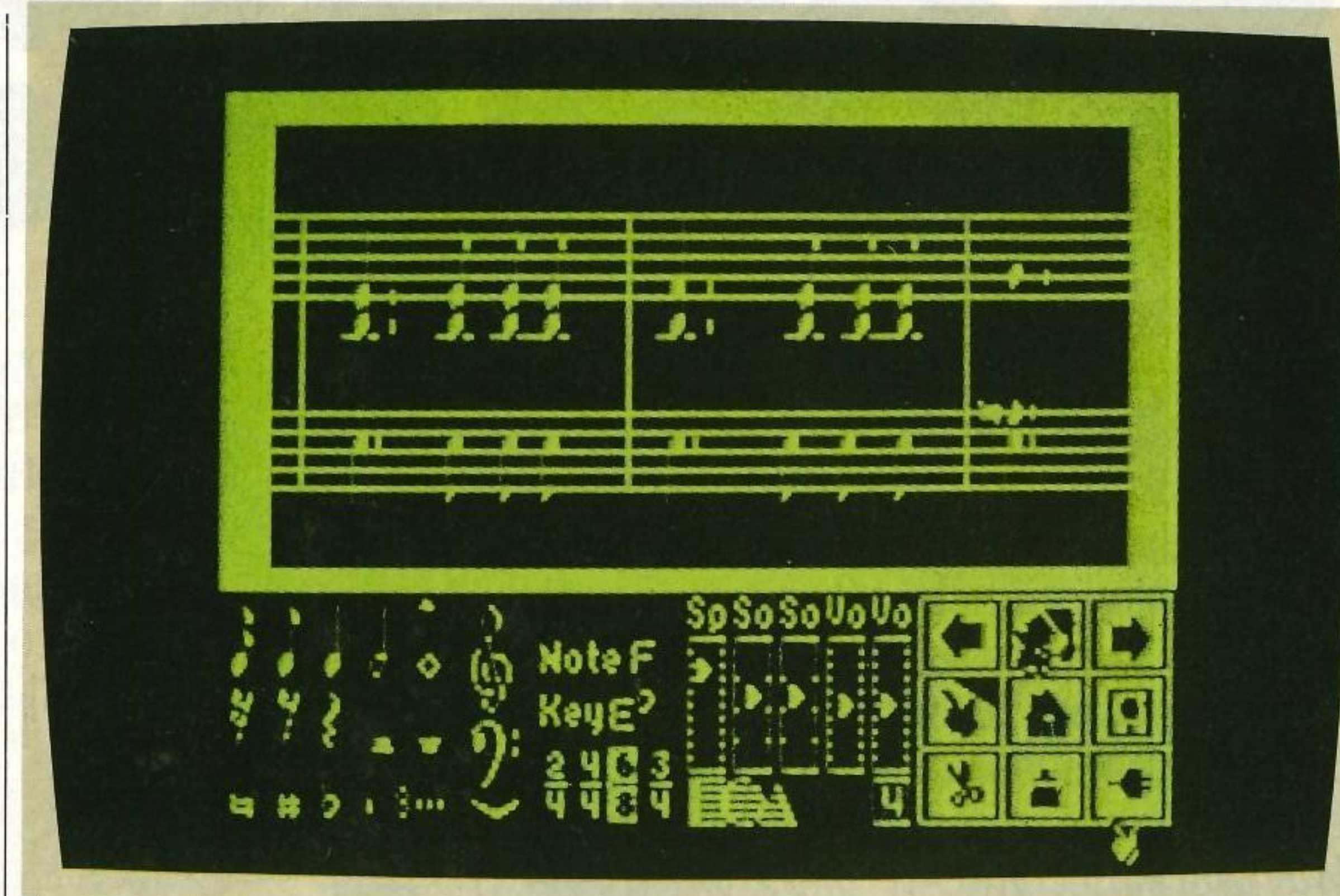
ing home. Then I pressed the button to make the staff go back to the beginning. Then I moved the cursor up one box in the icon menu to the piano icon, and pressed the button to play the song.

It played, and the melody was as I remembered it, but there was a problem. There's a beat counter to the left of the icon menu that keeps time as the song is playing. As long as the beat counter displays the beat in normal—as opposed to inverse—video, the timing of the measure being played is correct. When the beat display switches to inverse, then the number of beats in the measure doesn't match the time signature. Of course, the time signature went inverse right away. So what was wrong?

Trying to track this problem was not a very easy task, because I had forgotten so much about musical notation. I used to take lessons, but haven't done anything serious with music since I left college. The documentation suggests that a measure be taken apart one element at a time, mentally. By doing this, I found that I had two 16th notes in the first measure, and that was my problem. Two 16th notes, in 2/4 time, equal half a beat, and the time signature required two beats. I had to add rests (pauses in the music) before the 16th notes to make the time signature and the beat counter work together. The rests didn't appear in the sheet music, because the composer knew that any person playing the piece would start with the first note. The computer starts at the beginning of the measure, apparently, and demands that the number of beats per measure be correct. Adding the rests before the start of the piece solved the problem.

There was another minor problem. The piece played way too fast. This program has very good speed capability, so complex pieces can be entered and played. But I hadn't entered a note longer than an eighth, as the sheet music demanded. I had to reduce the speed.

That was easily accomplished. I just selected the pointing (hand) icon and moved it to the "speed indicator," a figure that looks like a slide control on the front of a stereo receiver. With the pointer below the small arrow that indicates the current speed setting, I pressed the return key and the speed setting moved downward. I moved it all



Music Construction Set can load and play a series of demonstration songs saved on disk. Users can see the notes move as the sound is produced.

the way to the bottom, homed the cursor, homed the music, moved to the piano icon and pressed return. The music played at a reasonable pace.

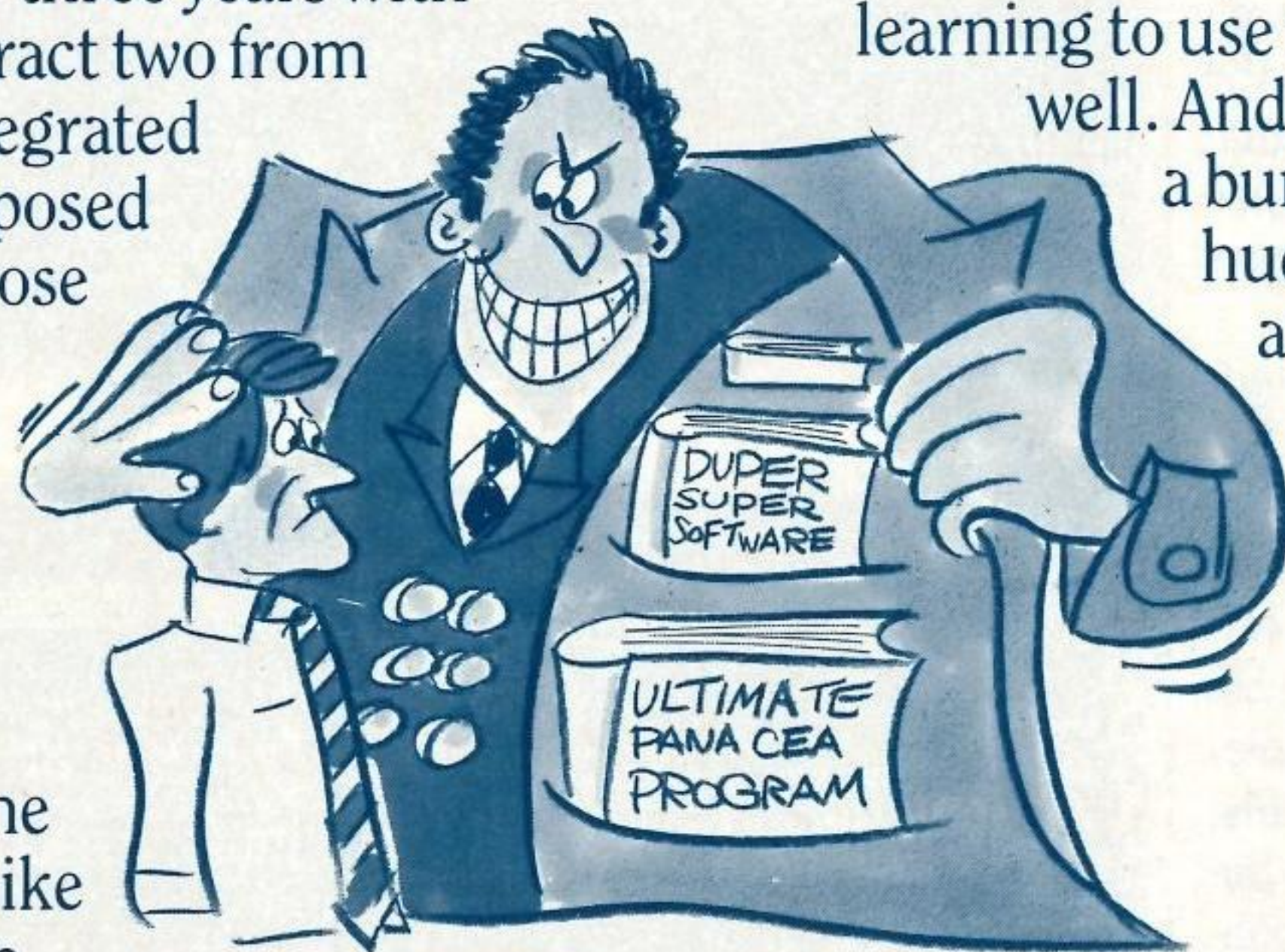
Playing the adjusted piece showed that everything was OK. So I proceeded to add more measures to the score. After I had eight measures in the treble staff, I noticed that the music repeated for the next eight measures. This is very common. Musical refrains repeat often. The program has the capability to make such repetition easier. Essentially, it lets the user cut and paste.

Cutting and pasting requires care. To cut, move to the icon menu and pick the scissors icon, which is the second point-

ing icon. Move that icon to the first measure to be cut and press the number of measures to be cut. Cutting measures, as the name implies, takes them out of the staff. The correct procedure for duplicating any number of measures is this: Select the scissors icon, place it over the first measure you want to copy and press the number, eight in my case, of measures to be copied; the eight measures go into a holding buffer. Then go back to the icon menu and select the paste-pot icon, the third pointing icon. Move the paste-pot cursor to the place on the staff where it was previously and press the button, and the measures reappear. Then move to where the meas-

Software lebunked.

1. The Super Software Snow Job. You've heard it. And plenty of it. Last year it was User-Friendly, which meant you didn't need a degree in computer science or three years with the Dalai Lama to subtract two from three. This year, it's Integrated Software, which is supposed to mean you can compose *War and Peace* and project the national debt out to 3427 AD, while summoning up the wisdom of the Library of Alexandria. All at once. Which is fine if you have an income like a phone number and an IQ like an area code. But not too practical for the rest of the human race.



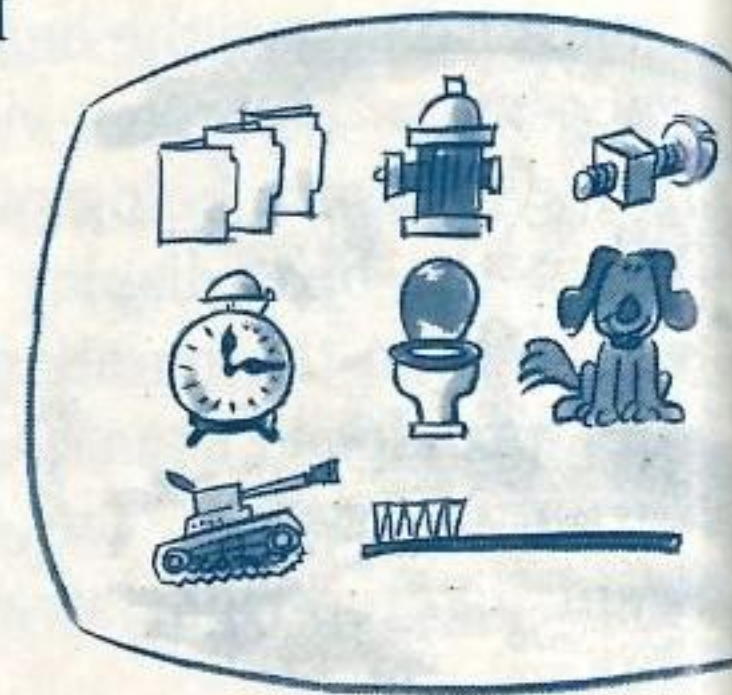
2. The Great Feature Freakout. How often will you need a word-processing program that handles Sanskrit? Or a spreadsheet with more cells than Alcatraz? Or a data base that will let you cross-reference every airline flight in the world? Don't laugh. Just



sample the documentation of today's "integrated" software. And if it doesn't disintegrate your head, you'll find you're privy to more useless gimcracks than the U.S. Patent Office. Software is supposed to make the complex simple. And practical.

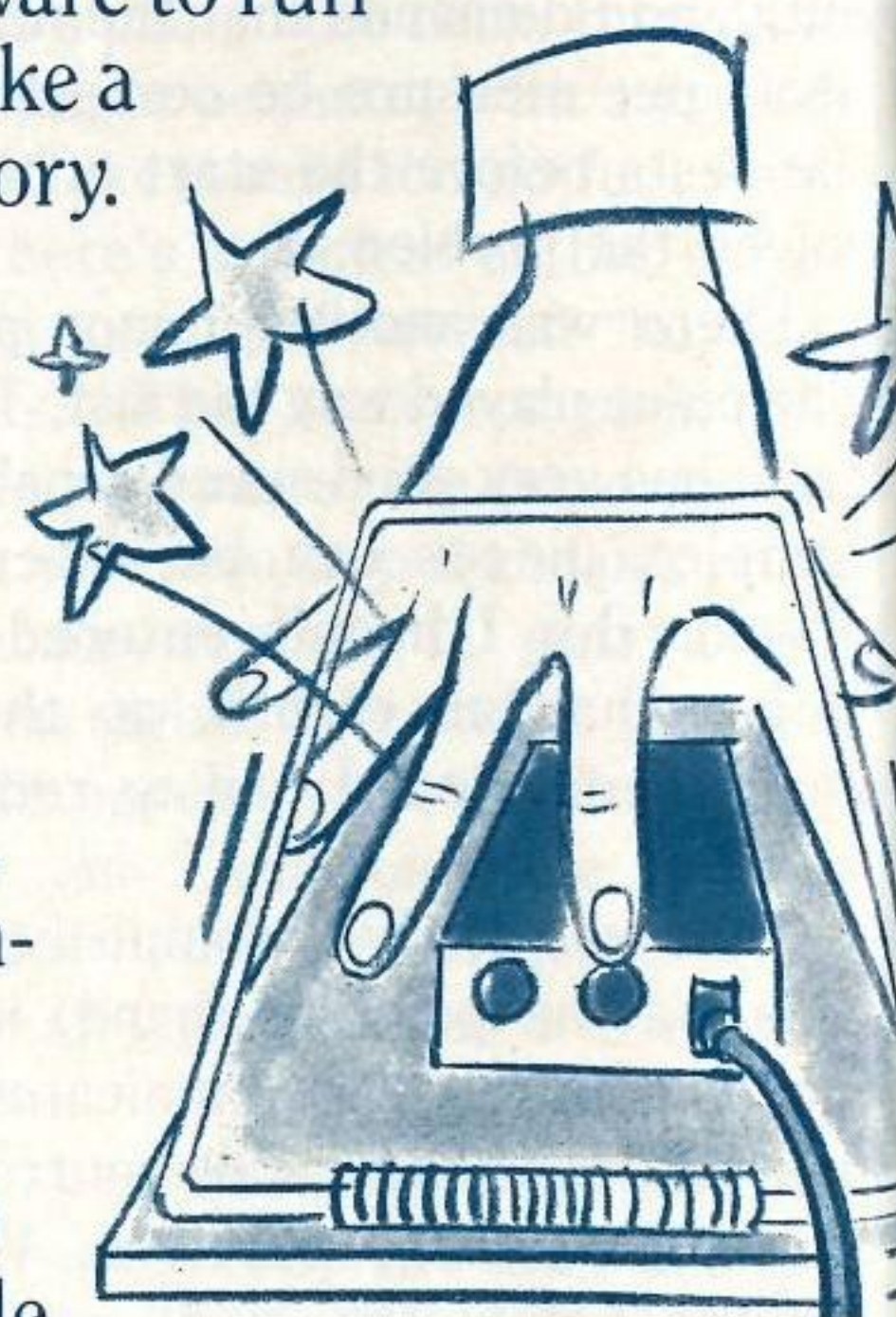
3. The Icon Con. See the tiny sheet of paper. See the cute little file folder. See the miniature clock. If you

feel put down by pictures that would insult even kindergartners, you're not alone. After all, you spent the first six years of your life learning to use words. More years learning to use them well. And now a bunch of hucksters are trying



to hustle you into using expensive pictures from baby books instead. Worse still, they shrink the size of your working screen and available RAM in the bargain. And what happens to the day's work when you wearily mistake a picture of an incinerator for that of a file cabinet? *There's a picture worth a thousand words.*

4. The Mouse Trap. As if pictures weren't bad enough, they'll sell you rodents to nibble more from your budget. Just sweep the papers off your desk and you can roll around to your heart's content. Of course, the software to run your mouse may take a big bite out of memory. And you could do the same thing faster and more precisely with your keyboard. But, what the hell, mice are *in*. (Today, that is. The next generation will bring mini-mice. Maybe even cockroaches.) For most jobs people tackle, mice are the same in computers as they are at home: pests.



5. The Byte You Can't Swallow. Alias the Program That Ate New York. Feed it 256k, 512k or more RAM and it's still hungry. And because the software takes up so much space (assuming the space is there in the first place) you find yourself painfully short of real estate to store the trivial things. Like the words you're processing. The numbers you're crunching. Or the data you're trying to build a base with. Talk about buying smoke!



6. The Hard Software Price. We've saved the worst for last. As if all this suffering weren't bad enough, you have to pay dearly for the privilege of *owning* it. And you have to buy it *all*. Which comes to the memory upgrade you'll probably also need. It's the kind of deal P.T. Barnum dreamed about and only a sucker would buy.

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ures are to be copied and press the button again, and the measures will be laid down.

The first time I tried it, I forgot to pick up the paste-pot icon, so of course no copying happened. Then I saw it wasn't working and realized why, and went and got the paste-pot. Now I moved to the place where I had cut and pressed the button twice to paste. This time I was successful because I was copying the first eight measures twice.

Now I could play 16 measures of melody. It was time to add the bass.

Timing was a problem again. The program works on the number of beats and rests, not on the position of the notes in the staff. So if a bass chord is to be played at the same time as a note in the treble staff, make sure there are sufficient numbers and values of notes and rests in the bass measure before the chord. For example, if the first chord in the bass measure is to play at the same time as the second quarter note in the treble measure, a quarter rest must be added before the chord in the bass measure to make it all come out right. As I watched the piece play, it did not seem to matter where the note was on the staff for time. The program only seemed to be influenced by the number of rests and notes. I had to experiment a lot with the first measure in the bass staff to get the chording right, but finally I did it. Once the first measure played correctly, I had the timing for the rest of the bass, which was simple. At least it was simple for the first 16 measures.

The bass phrases repeated after four measures, so I entered four, then cut and pasted copies where required. Finally, I got my reward. All 16 measures of both the treble and bass were entered, and playing the song produced a very pleasant sound. By this time, I had spent about four hours on this piece, so I decided to save it on the diskette. This procedure is quite simple. Move the pointer to the disk icon in the icon menu and press return. The screen clears, and commands can be entered for disk manipulation. The first thing I had to do was format a diskette. When the formatting was done, I typed "save song" and the song I'd entered was written on the diskette.

Pressing return after the save got me back to the program.

After the first 16 measures, this

piece moves into a simple interlude. Then it goes back to the second phrase of the first eight measures. The task was clear—build the interlude and then cut and paste four of the first 16 measures.

I built the interlude one measure at a time, first the treble and then the bass. In the last measure of the interlude, the rhythm moves up to the treble staff. In musical notation, this is indicated by placing a treble clef sign in the bass staff. That was easily done. I just moved the cursor to the appropriate point and pressed T, and the treble sign appeared. Then I had to enter two chords, with D as a bottom note.

The Music Construction Set can play three notes at one time on the Commodore 64. Thus, I could build three-note chords expecting them to play correctly. They played, but building them is a time-consuming process.

Music Construction Set needs something like a scratchpad, which would be a major convenience with complex entries. With a scratchpad, it would be easier to build up a three-note chord and then move the chord around as a unit. It doesn't have this capability, so you have to enter a chord note by note. Pressing the space bar repeats the process, but since only one note is entered, even that doesn't really help too much. It takes a lot of keystrokes to get a chord down. But I got there—four measures of interlude.

Now it was time to copy the four measures that came after the interlude. I went to the treble staff of the measures I wanted to copy and pressed 4. The four measures on the treble staff disappeared. Now I went down and got the paste-pot and then went to the end of the piece to copy the four measures I had cut. However, I forgot to copy the measures back where I had cut them. I didn't realize this blunder until I played the piece through, and the bass and treble were completely out of synch. I had to recut and repaste to put the music together again. Then I did the cut and paste on the bass, and finally, the music played through 24 measures.

This program has its pros and cons. Music construction is frustrating, but the music playing is great. You can change the sounds, speed and volume to get a number of effects, and if you put

the music in right, it sounds terrific. Getting there is a problem though.

I know that icons and pointing devices are all the rage, but I would not want to use them for word processing, and I did not like them for music processing. For users such as myself, who prefer a keyboard for cursor control rather than a joystick, a good set of function-key sequences, while perhaps more difficult to learn, would be a lot easier to use than icons and pointers.

Nevertheless, the Music Construction Set is enjoyable for a user who wants to enter music and play it back right away. It took me about five hours to enter the 24 measures of music I wanted to play, and my entry speed constantly increased. Once they were entered, the measures played properly. After I had gotten tired of playing the computer music, I went to the piano and tried the piece there with predictable results. Since I've barely touched a piano keyboard since the eighth grade, my playing was halting and full of errors. It would take days of practice to make my piano playing sound as good as the computer's music.

Can this program be used to compose music? Yes, it can. Writing music for an instrument is likely to be easier with pencil and music paper. But for those who do not play an instrument or don't know music theory, this program offers a nonintimidating way to experiment and learn. It continually presents the opportunity to ask musical what-ifs: What-if I change this chord, or what-if I add a rest here? A beginner can put the music down, play it, and change it again and again. A musical creation can evolve and develop as the user grows more confident and skillful.

Electronic Arts suggests in the program documentation that music novices consider picking up a basic musical instructional book. There are a wide variety of these types of books available. If you are a beginner, using such a book in conjunction with Music Construction Set should make the program much more enjoyable. You should be able to get pleasant-sounding music right away, without a lot of trial and error. As your musical experience grows and you begin to experiment with the program, you should find that your musical efforts sound less cacophonous and more melodious.

—David Gabel

Take A Letter With Bank Street Writer

From writing to editing, formatting to printing—here's a run-through of the Bank Street Writer word processor

■ BANK STREET WRITER runs on Apple II series, all Atari, Commodore 64, IBM Personal Computer and PCjr; \$69.95, \$79.95 (IBM); retail or direct order; Broderbund Software, 17 Paul Dr., San Rafael, CA 94903; (415) 479-1170; separate version for schools (identical program, different packaging and documentation, two back-up disks) sold by Scholastic, \$95; all programs contain a tutorial on flip side of disk.

Bank Street Writer was developed as a first computer writing tool by the Bank Street College of Education in New York City. The program has evolved since its introduction, winning broad popularity first in schools and now in the home or casual word processing market. Recently, it has been enhanced for the new 128k Apple IIc. However, Bank Street Writer continues to be billed as a home or non-pro-

fessional word processor.

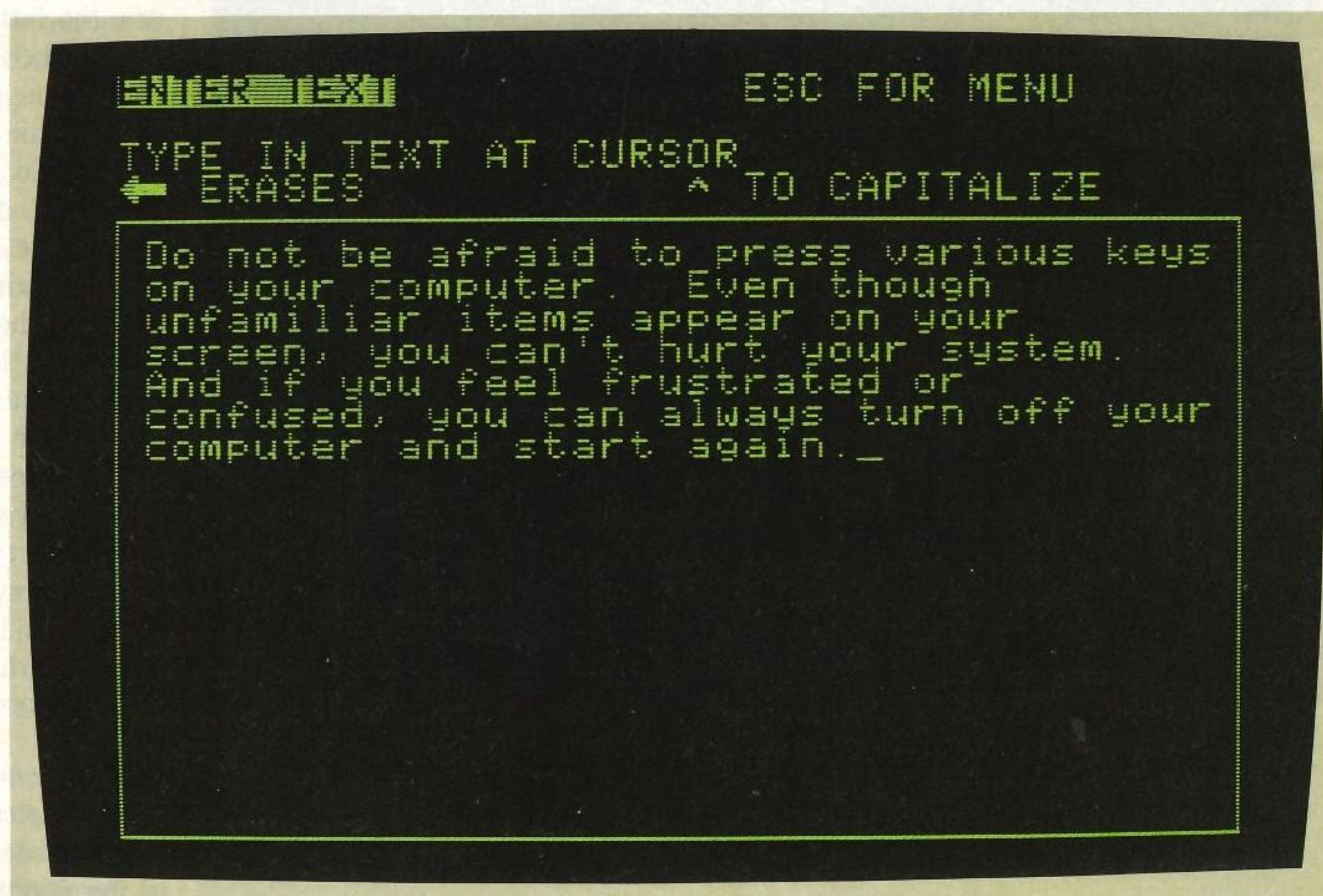
The screen presents itself as a blank sheet rimmed in light after the disk is booted. The top of the screen begins with the terse instruction, "enter text," followed by other brief phrases on how to go about it. A first test of the program on an Apple IIe, following a quick perusal of the on-disk tutorial, showed that a simple letter could be entered and saved in rough draft form in about 30 minutes.

I began to write a test letter by following Bank Street Writer's opening screen directions: "type in text at cursor." The command was followed on the next line by a graphic icon (showing a left arrow key) and the word "erases," which I took to mean that the left arrow key wipes out text to the left of the cursor. That was right. On the Apple IIe, the right arrow key also erases text to the right of the cursor, so as I wrote,

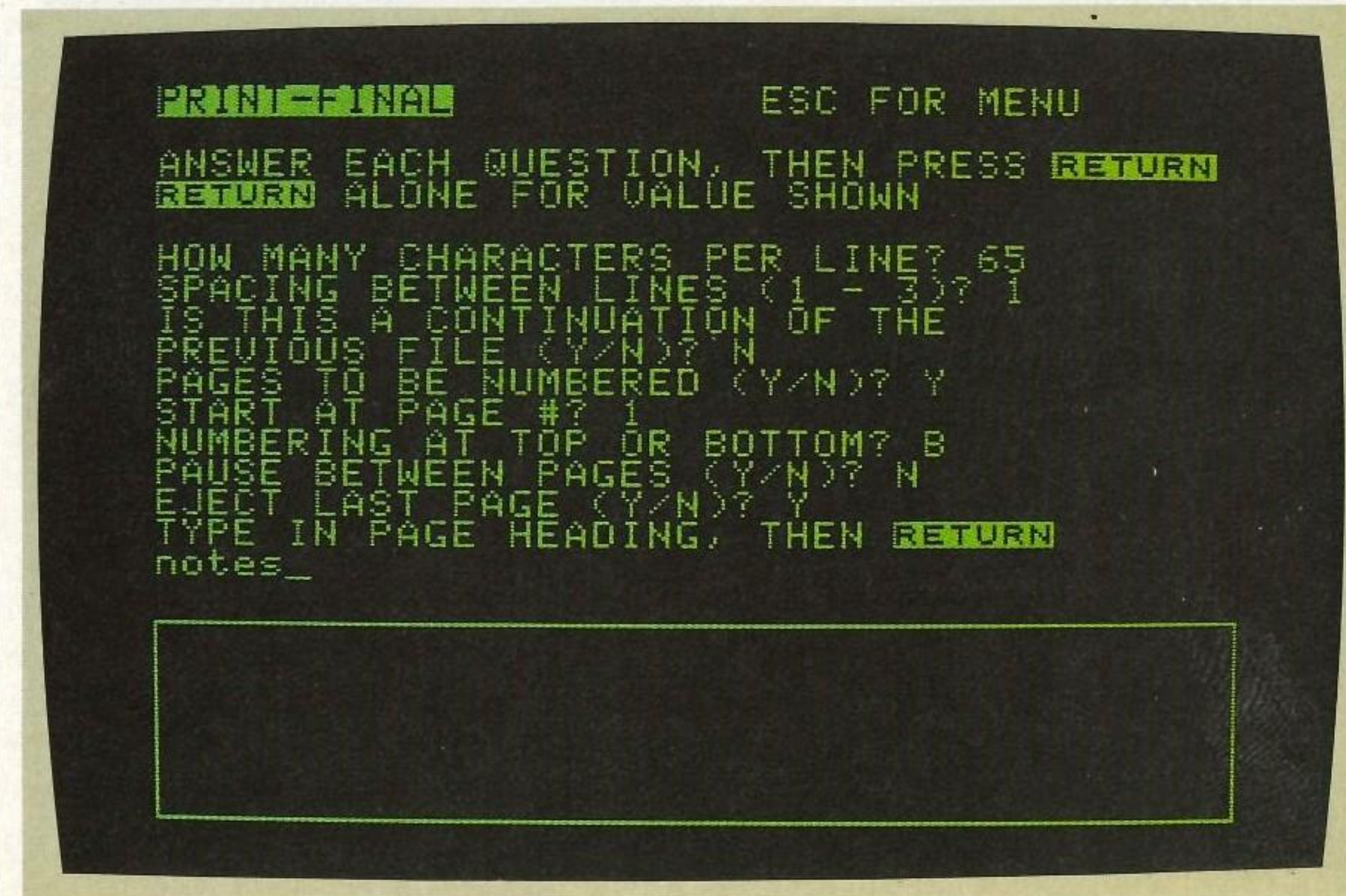
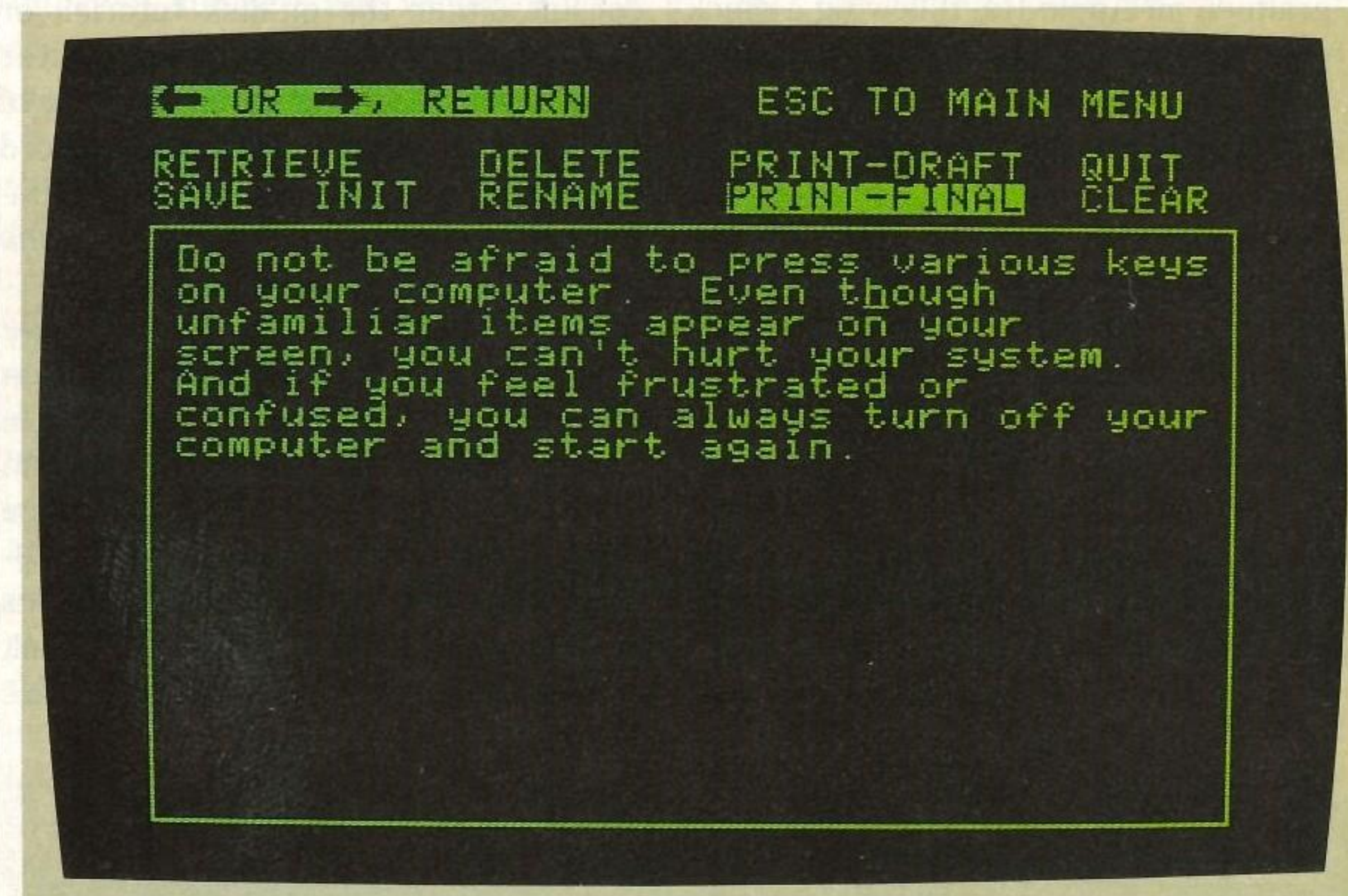
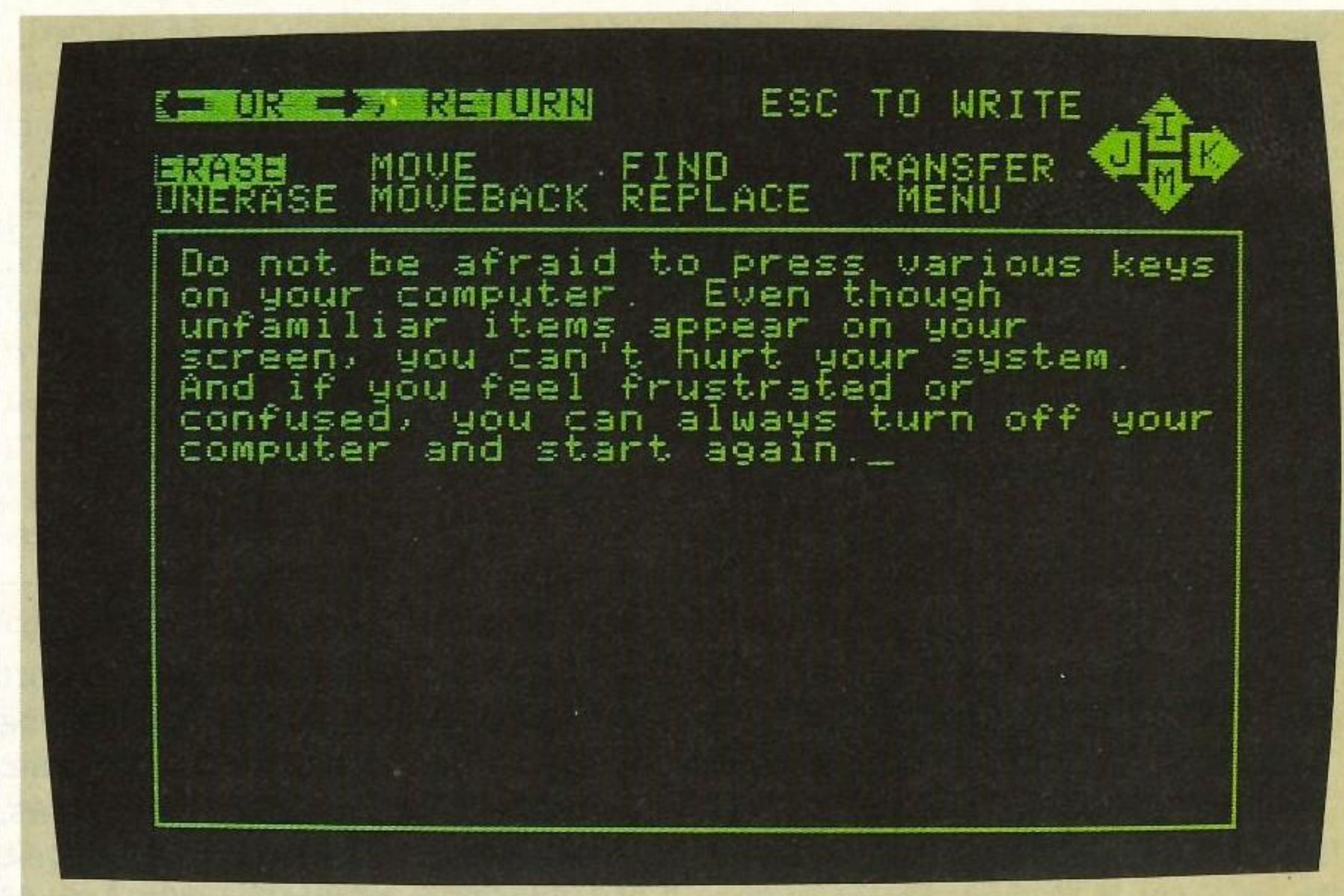
I could erase text in either direction.

The on-disk tutorial helped support these first writing efforts by providing reference to key points in the program: text entry, simple cursor movements, block moves and other editing changes. If I needed to clarify a move, I could consult either the on-disk tutorial, or the pocket-size Bank Street Writer manual which documents each sector of the program. A child or first-time word processing user would most likely benefit from some time spent with the tutorial.

As I typed, my words appeared inside the electronic "box" or blank sheet on the computer screen. The large-size letters were displayed in upper- and lowercase—ideal for children—since Bank Street Writer supports a 40-column screen on the Apple II, II Plus and IIe. (The newest version of Bank Street Writer for the 128k Apple IIc



When you begin to type inside Bank Street Writer's electronic "box," the words are wrapped around to the next line, emulating the carriage return of a typewriter.



will accommodate either a 40- or 80-column board.) As I continued to write, filling a line and then a page, the program automatically wrapped words to the next line, emulating the carriage return of a typewriter. After it had filled up virtually all of the blank box, the program scrolled the copy up nine lines so that I could continue.

When it came time to edit mistakes in the copy I switched to edit mode. Edit and writing modes are separate in the program—each mode has different ways of controlling or freezing cursor movements. In write mode, for example, when I wanted to erase words or phrases on a particular line, I could indeed execute the function by pressing the appropriate arrow key, watching the text to the right or left of the cursor disappear off the line. I *couldn't*, however, jump the cursor to any other spot on the computer screen to do erasures. The cursor was, in effect, frozen on the particular line of text being worked on.

To free up the cursor, I had to switch into a separate edit mode, which I did by following directions at the top right-hand corner of the screen, which read "ESC for menu." Pressing the escape key, I left the write mode and automatically entered the edit mode where I was able to utilize the four Apple IIe arrow keys to move the cursor wherever needed. (On earlier Apple computers, the letters I, J, K, M act as arrow keys in the edit mode.) Once I had positioned the cursor properly, I tried to write again, but the letter keys were frozen and nothing registered on the screen. In order to continue writing, I had to press the the escape key once more, exiting the edit mode and re-entering the write mode to insert text. A typical letter requires dozens of toggling moves from one mode to the other. The best way to avoid the toggling moves is to stay in write mode until the draft is finished, then switch to edit mode to make revisions.

I abandoned my usual first draft perfectionism after trying this strategy on the first draft of the test letter. I wrote a letter to my sister-in-law, signed off

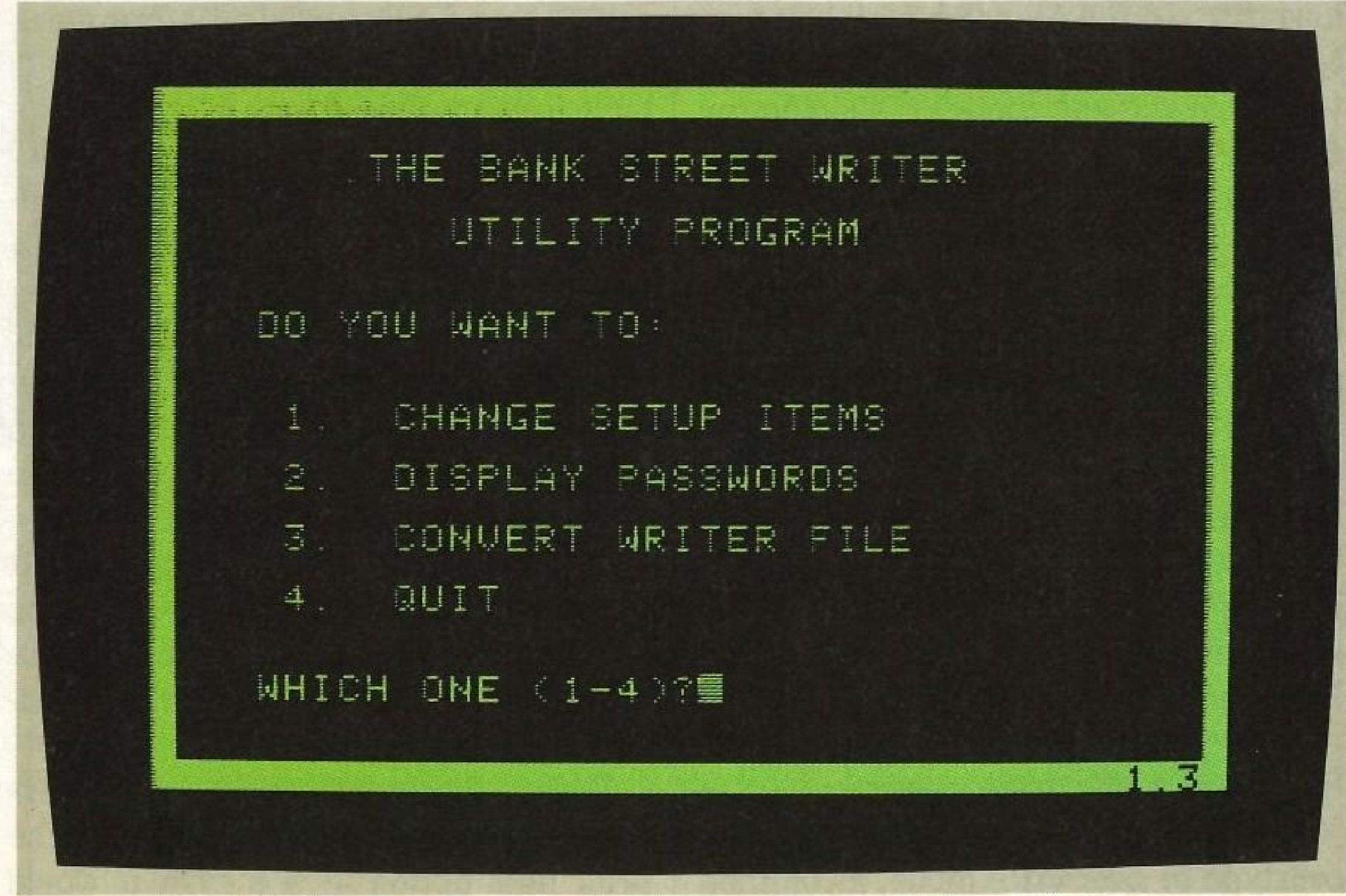
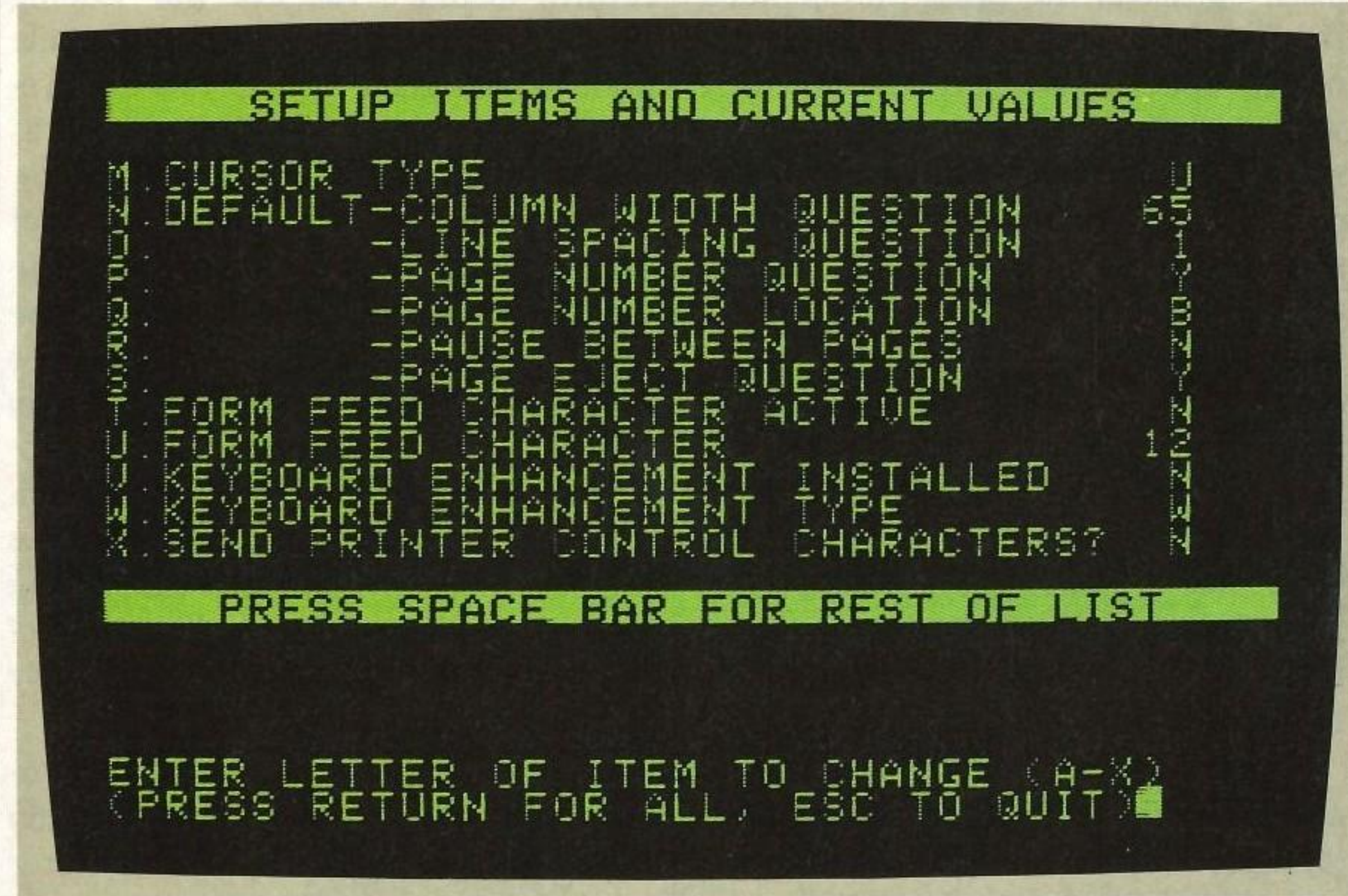
Limited formatting range (top). Basic formatting is evident (center). You can install printer or disk drive requirements at the utility menu (bottom).

with "Love," then hit the escape key to access the edit mode menu. In edit mode, I had seven major options to choose from: erase, unerase, move, moveback, find, replace, and transfer menu (the latter is an option that gets into format and printing submenus). All of these operations appeared at the top of the command line. All I had to do was press the solid apple key to select any of them. Pressing the key, I watched a highlighting bar that moved across the screen from one operation to the next. Pressing the space bar toggled between opposite functions—erase and unerase, move and moveback, etc. (In other versions of the program, arrow keys move the highlighting bar across the screen.)

With a number of text erasures to complete, I chose the erase option first. Hitting the return key, which tells the program I've selected that option, I followed the directions that appeared at the top of the screen. The program first asked me to use cursor movements and the return key to mark out the block of copy I wanted to erase. I "marked" the desired word or paragraph by placing the cursor on the first letter, then hit the return key, using the arrow keys to move the cursor onto the last letter in the block, hitting the return key again. The entire block of text—whether a word, phrase or entire paragraph—was highlighted as I dragged the cursor from beginning to end point. Once the marking was completed, the program flashed a message asking whether or not I wanted to execute the erasure. The program executed my command after I pressed Y for yes.

Other editing functions on the menu proceeded in a virtually identical manner. To move a block of text, for example—whether a single word or entire paragraph block of up to 15 lines—I moved the highlighting bar to the move option. I then marked out (defined) with the cursor the block of text to be moved, hitting the return key and highlighting it. Following a screen prompt, I moved the cursor on the spot in the text where I wished to insert the copy, hitting the return key again. The program immediately transported the highlighted copy block to the desired spot,

Staying in the write mode (top) avoids toggling moves. The print final option (center) contains default values, then questions are presented (bottom).



asking again, "Is it OK to move text here?" I hit N for no, Y for yes, just as I had for the erase option. By pressing yes, I could still undo my move by toggling to the moveback option, which restored the text to its original spot. In each case, the program issued a query before executing a command.

When I wanted to change certain words in the letter, I toggled to the find option, pressed return, and at a prompt, typed in a word or group of consecutive words (up to 29 characters) to be searched for. The program immediately highlighted the first incidence of the word, then asked whether I wanted to search for the next occurrence. If I pressed N, it would return automatically to the edit menu, if not, the program continued its search. The replace option in the program extended the find feature even more by allowing me to specify not only the words I wished to find, but also their replacements. This feature would be ideal for children who've noticed an incorrect spelling or misused term repeated throughout a letter, report or composition. (Bank Street Writer now has a companion package called Bank Street Speller to check spelling errors throughout the text.) Find and replace may also prove useful for home writers who, after completing a draft of a document, have found that they've quoted an incorrect figure five or six times by a factor of one or more zeros.

The program's constant querying and doublechecking began to block editing speed after I had spent some time with the editing functions. I was so anxious to avoid the program's constant interruptions that I kept looking for ways to escape the edit mode or shorten my time there. I found that the fastest way to erase wasn't in the erase option at all but the arrow keys in the write mode. For quick cursor movement, though, I was forced to resort to the escape key again (back to the edit mode) although as soon as I freed up the cursor, playing with a few special function keys (like B for beginning, which jumped the cursor to the bottom), I tried immediately to dive back into writing. Sometimes I found myself deleting and retyping a line or paragraph rather than switching to edit mode and executing a full-fledged move or erase operation.

Bank Street Writer offers no real overtype or overwrite mode, a common

feature of most word processors. The user can either delete the line and type a replacement, or push it to the side by executing a standard insert. That means popping the escape key and moving the cursor to the spot where you want to insert a word or line, then popping back into write mode to insert the text. After executing this series of functions, the text moves to the right.

When I was ready to save the letter, all I needed to do was get into the transfer menu, pick a save submenu option, type in my file name and password, and watch the red light of my disk drive illuminate, indicating the file was saved.

The other options in the transfer menu, which are accessed by toggling to transfer and hitting return, included retrieve (for loading files), rename, clear & delete (disk file utilities, designed to help the user rename files and manage disk space), as well as print draft and print file. Retrieval procedures worked in reverse of save procedures, with a request to name my document and password (the program registers a password but does not show it on the screen). I could also request a disk catalog, so that the program could search for my file. The loading was automatic and presented no problem; once my file was recalled from the disk, it appeared in the blank box of the write mode, so I could immediately resume writing.

Executing these functions, I proceeded directly to the print draft option because I wanted to see how the letter would look in printed copy. Hitting the return key, I responded to a few questions referring to formatting defaults built into the Bank Street Writer program. Did I want to print the entire file? What header did I want on the document? I answered the questions, pressed return, and the letter printed out on the C. Itoh dot-matrix printer with only 38 characters per line (exactly as it appeared on the computer screen), which were centered and aligned in the middle of the page to look much like a poem. This is standard format for a print draft document in the program, but it can be altered by adjusting format parameters in the separate utility program (included on the Bank Street Writer disk).

Rather than adjust those parameters at the moment, I switched back to the print final option to see what it would

do. First referring to manual, I learned that this part of the program contains several standard printer default values, and adopts a "what you see is what you get" approach to user-controlled formatting. In short, there is very little a user needs to do. In the write mode, for example, before getting into printer formatting, a user can first embed a few simple format commands, such as indenting entire paragraphs or centering text by using Ctrl I and Ctrl C keystroke combinations, which the program will read. Other than that, the program's printing utility reproduces exactly what appears in the electronic "box" of copy, except for the default or customized settings the user inputs the print final option of the program.

For example, when I hit the print final option, the screen instantly presented a series of questions about printer default values.

It asked me, among several questions, "How many characters per line?" presenting its default value of 65. (I had the option of choosing between 40 and 126 characters.) The program went on to query me about line spacing, file and pagination information, pauses between pages, type of page heading, and partial or complete file printing. In each case, the program presented a default value, usually designated by a number or a Y/N option. It even asked whether I'd like to see on the screen exactly where my pages would break, allowing me to force a page, or adjust pagination by moving a page up or down with vertical arrow keys. I could bypass each default entirely by specifying my own, or I could press the return key after every question, telling the program to go ahead and print with that default value.

The resulting printout showed that the margins, top, bottom and side, were well set (I had kept most of the program's own default values intact), the pages were broken properly and the spaces between lines were even. I had a letter that looked just like a single-spaced, typewritten letter.

This test drive should acquaint users with the basic commands and capabilities of Bank Street Writer. For additional functions, refer to the program's manual and reference materials.

—Arielle Emmett

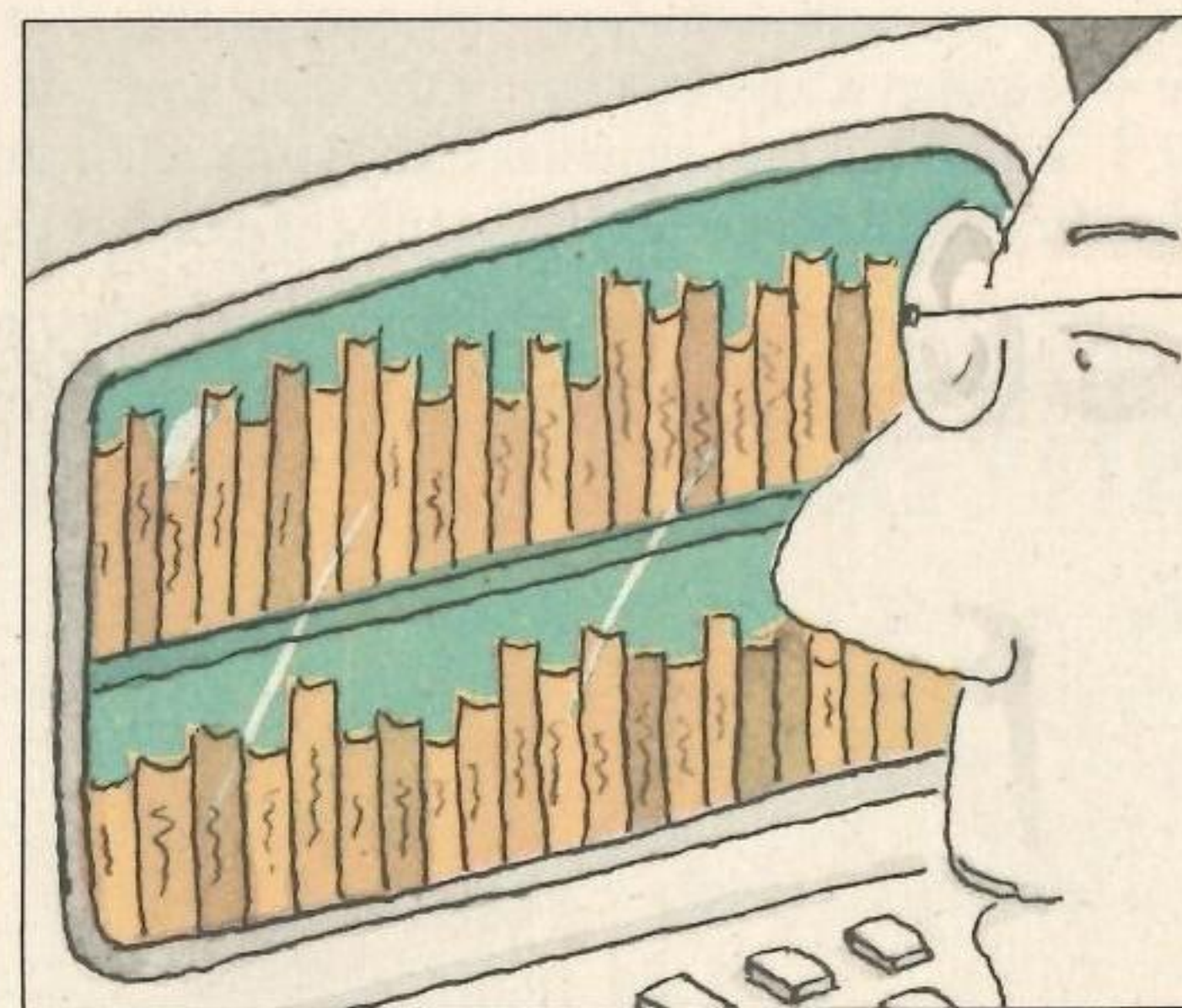
For more information circle 118 on the reader's service card.

Relational Data Base Managers

This is a guide with all the facts and information you need to choose relational data base manager software. These programs can help you keep vital information current by letting you easily add to, subtract from or transform information into lists, tables, ledgers, forms, invoices or labels.

The overriding rationale of the Computer Age seems to be that information is power. And, it stands to reason that if information is power, the more efficiently you can collect, manipulate and use information, the more power you have. The tool that can help do this most effectively, according to experienced users, is a computerized data base system.

When a non-user thinks of a computer or computer system, it's a safe bet that one of the first associations—however foggy or ill-defined—is of a vast storehouse of information that can be tapped for pertinent details on any subject. The non-user may see the computer as omniscient—even sinister—in its ability to create a vast library of facts, then store and sift them, and effortlessly report their significant relationships.



In reality, data base systems that allow truly infinite and random access to information without a rigid, pre-imposed data structure, are as yet unknown. But limited variations on this grand theme abound, especially for personal computer users.

Data base managers are computerized systems for maintaining records of information or searching and gathering that data. Generally, regardless of what type—relational, hierarchical or networking (more on that later)—they have the ability to create, maintain and manipulate a collection of information. It's misleading to compare a data base manager to a file cabinet—with files analogous to drawers, records to pieces of paper, and fields to line items on the paper. Why? Because a good data base manager allows you to manipulate data in a file more efficiently than a

cadre of clerks could ever do, and much faster, too. For instance, it lets you instantly transform the information from its raw state into lists, tables, ledgers, forms, invoices or mailing labels—things that could take days by hand. It may also let you do calculations, and other applications-like functions.

How should you buy a data base management system? What should you think about before you walk into a computer store? Plan carefully. If you have a fuzzy idea of what you want, you will wind up with a fuzzy system. For example, if you plan to create a custom system for handling the inventory of a small auto parts business, you'll probably need a program that allows you to tailor the features to suit your needs. This is possible with a program that offers a command language. If you plan to do only a listing of customers, compiling information from various files and updating it frequently, you can probably get by with a program that lays everything out for you, that is, gives you an inflexible range of options from which you choose to progress through the program. This is commonly called a menu-driven program. But remember, the functional life of the system will be short if you buy a package that runs out of features before you run out of uses you can devise for it.

The job of designing and administering a large data base is a giant task. But it's almost as hard to identify a data base management system by type, at least in today's market. It's not unlike trying to find every piece of music that qualifies as a love song. There are really

The non-user sees the computer as omniscient—even sinister—in its ability to create a library of facts.

three categories of data base managers: file and report size programs (single file, single report products); high-level programmer's tools; and products in the middle—with these broken down into packages that may lean more toward one end of the spectrum than the other.

There are further divisions in the more elaborate packages. These programs are conventionally categorized as networking, hierarchical, or relational. With networking and hierarchical systems, the user must know the links between the information stored in the data base—that is, the relationship between one entry and another, and the conceptual path to each one. With a relational data base manager, ideally at least, the user need not know the links between the data—though they exist in the program—in order to use the system. Conceptually, a hierarchical structure is like an inverted tree—you start at one data item, and the relationship between it and another in the data base is defined by branches or pathways from one to the other. A true relational

structure has a data field that has a defined pool of possible values. It can be likened to a table of rows and columns, from which is constructed smaller tables of the desired information. Again, all of this is invisible to the user, the important thing is that with a relational data base structure you should be able to select, join, add and subtract data items easily.

The chart which accompanies this article lists products that are positioned by their makers as relational data base managers.

Most data base systems require you to systematically design the manner in which you plan to use the program. You have to supply the definitions of your data, sometimes from a menu and sometimes with program commands. In any case, a useful data base management system should allow you to:

1. Create a data base structure.
2. Add new information.
3. Sort the information.
4. Search for the information.
5. Report the data in the form you want, including as a file that is ready for use by a variety of applications programs, such as word processors, spreadsheets, etc.
6. Correct the data or make editing changes.
7. Remove data when necessary.

Price (though not an overwhelming factor for experienced users who know precisely what they want, or who are in a business situation where the cost of inputting data will amount to more than the actual cost of the software) may be

What Can A Data Base Manager Do?

Hayes Microcomputer Products, Inc., of Atlanta, Ga., gave their data base manager 'Please' a test drive before it was released this spring. The experience of the Georgia Dental Association in using the product helps show the impact that a data base manager can have on an organization.

The dental group used the product for a year. They had had no computerized system before that time. They found that it saved them a tremendous amount of time and enabled them to do things for their membership that they were never able to do before.

The association used the program to maintain information on some 3079 dentists. The data base contained 96 pieces of information on each member, including the specialties they practiced, the papers they had published, and the status of membership.

The program allowed group administrators to pass out telephone referrals to patients who needed emergency treatment or who wanted a particular dentist who, for example, offered senior citizen discounts or free screenings. If, for instance, a caller wanted to see a doctor specializing in oral surgery who had graduated from a certain school, the software produced a list of dentists who matched the specification.

The program enabled the association to make up special reports that would have been difficult, if not impossible, to do before. Please has generated such items as lists of dentists eligible for life membership, dues owed from the wives of the dentists for their auxiliary, and reports on third party insurance payments. The program has also been used to send out bills stating exactly how much has been paid and how much is owed.



critical for first-time users. Take a look at the package and what you're getting for the price. Are there expensive add on options? Report generators, which let you get reports out of the data base—through menus or simple commands—without having to write a lot of programming code, should be included with the package.

The buying process is going to depend in part on whether you have any data processing experience. Business and professional people new to the world of personal computers should avoid programmer or technically-oriented data base systems. Take, as an example, a data base manager that uses a query language. Typically this kind of program comes up with a blank screen and a prompt, and you type something to get it to work. This may be confusing for a beginner. Once again, a novice should probably

look for a menu-driven program, which operates much like filling in a form—you choose what you want to do from a range of options, a list of multiple choices. There are front end programs that add menu features for some of the command-language programs, but they also add to the cost of the basic system.

Try this approach. Define your business problem. Devise possible solutions. Then make a first pass at some of the packages that could meet your needs. Look at what your current system does—whether it is automated or manually-operated. Try to determine how your data must relate to itself (each piece of information), and think about its end use. What do you do most frequently? Do you take requests for information over the telephone? Make up summaries of activities on a periodic basis? Try to analyze how the bits of information you use most frequently relate to one another. Use a chart if

necessary, drawing maps of how information flows—broken down by type and frequency—from one point to another, like on a wall chart. Check with subordinates or the people who currently manipulate the data.

Take a look at the hardware you have on hand and the hardware you'll need to buy and try to determine the kind of training you'll need for yourself and others. Think about how you can make the system grow. Will the software let this happen gracefully?

Ask your dealer for a list of people who use the software you're considering. Contact as many of them as possible and ask about the pros and cons of the package, and their experience with the company's support—or lack it.

You should be able to query the data base easily. You might typically use a few keywords to find the information you want and devise macros, or command sequences that you store in the

program, for frequently-used searches. You should also look for a way to customize your input screen, especially if you have to frequently and rapidly enter a lot of data.

Try to determine whether you can change reports and the relationships between data after you have created a data base—you may otherwise be stuck with bits of information that you can't get out of the data base. That is, don't get locked into an rigid format. You may have information in the data base, but you may only want part of it. Some programs lock you into a certain format—you put it in and that's the way you have to take it out. In others, you can take out pieces of information and join that with information from other files—and it doesn't matter what sequence the information is in. You can take it out, even search and sort, on any part of it.

The point is, you should be able to

maintain the integrity of the data base. If you add to the information, or subtract outdated information, you should still be able to access the remaining data without having to rewrite the input routines or report formats. The query structure should stay the same and programs that use the data should not have to be altered. If you make minor changes in the information, even after entering all the data, you should not have to re-enter everything in order.

What are some special features? With an advanced program, you should be able to lock unauthorized users out of certain files—payroll and other confidential files, for instance. You can use this feature to prevent two different people from updating the same file in different ways. Integrating with the corporation's existing data system is another useful feature.

An accountant would want a system that lets him check entries to reduce the chance of an error later on. A businessman may need a little more flexibility, such as a system that lets him keep track of inventory.

The documentation is often one item which is overlooked. Is it understandable? Is there a comprehensive index? Are examples clear and well-illustrated? Many data base programs are accompanied by documentation that is ponderous, complicated and nearly unintelligible. Try to estimate how long it will take you to learn the program. In many cases this could involve a considerable investment of time. If the program allows special programming, will you be able to learn the language quickly? Remember—the disk will wear out, the program won't. You'll waste time and effort finding out the hard way that a program is the wrong one.

—Charles Miller

Data Base Vs. File Managers

There are almost as many opinions about what a data base management program is as there are programs on the market. A large part of the problem centers around the distinctions between so-called file-manager programs and those that are termed data base managers. Here are some opinions on the matter.

Rob Hershfield, product support manager at Concentric Data Systems, Inc., Westboro, Mass., maker of the Concentric Information Processor, says, "Everybody has their own definition, but I think of a file manager as a program that will work with one file at a time, while a data base manager will transparently handle all the interactions between a bunch of files. The user doesn't have to worry about what is in which file. You might have a list of customers and a list of invoices. The computer may keep each in different files in the data base. But it will do it without causing you to think about it. With a file manager you would have to make up two different files and worry whether they are in sync."

At Executec (Dallas, Tex.), manufacturer of the Series-OnePlus integrated data base manager, Jeff Anderson, marketing services representative, says, "Generally a file manager is not as complete as a data base manager. A file manager cannot break down individual areas of data separately, but with a data base manager you can pull up part of the information and search and extract from that rather than the whole file. The difference is the way the information is handled."

Greg Bruner, customer service representative at Desktop Software Corp., Princeton, N.J., maker of the NPL data management system, says, "Basically a file manager

is more limited than a data base management system. In general, this is because it doesn't offer the reporting capabilities. With a data base manager you have an extensive reporting capability, along with a powerful data entry facility."

"With a file management program, you enter data, store that in the data base, and then you get reports on key fields in that file," says Fred Sconberg, marketing manager at Advanced Data Systems, Sacramento, Calif., maker of Aladin, a data base management system. "It's similar to a file cabinet—you pull out a file, look for the information you want, and then put it back into the cabinet. With a data base management program, you create your file and put your information in it; then you can generate the reports that you want from that file. And in generating that report you can take information from a second, third, fourth file—or more. You can do calculations on the information, and then analysis. If you want to know the percentage of total sales the revenue from a certain item represents, you can find out and use it in the form of a graph. A file manager is a storage and retrieval system only. A data base manager allows you to manipulate data in such a way that the information can be used to make a business decision."

"It really has to do with the power of the two systems—how much they can hold and also how many files they can access at once," said Katy Johns, product manager at Information Unlimited Software, Sausalito, Calif., maker of EasyFiler, a file management system. "With a file management system, you input your data, set up your data base, and then you generate reports from that informa-

tion. In a data base management system, you input your information and access that information from many different kinds of fields—you don't have to set up a separate data base every time you need to use the information. You have a greater capacity with a data base management system—it lets you continually update the data. Most of the file managers are menu-driven; that is, you are presented with options and the program carries on the processes for you."

Jennifer Godward, product marketing manager for Micropro's data base manager InfoStar in San Rafael, Calif., says, "There are several different ways to look at it. If you can work on more than one file at a time, then you can set one up as a transaction file and the other as a reference file that will do updating. With a file manager you can never do that because you're only processing one file at a time—you're limited if you're trying to build a system, such as an inventory. File managers tend to be more limited in capacity, in terms of the number of characters per field, fields per record, records per file. A data manager tends to be more powerful in sorting. The more keys fields you are allowed, for instance, the more powerful a system is—it leads to more things to sort on. Any product that can only access one file at a time is really a file manager."

Jeff Garbers, vice-president of product development at Microstuf (Atlanta, Ga.), says, "Those kinds of labels are used more by marketing departments than anyone else. The distinction is kind of arbitrary. I think a data base management system is distinguished by programmability, whereas a file manager is fairly self-contained—everything is there. You don't have to write a program, you just punch numbers from a menu to make things happen. The question should be: Is the product more a program unto

itself or is it an environment for describing or manipulating data bases? The term data base itself is very broad. A telephone book is a data base when you think about it. Anything that manipulates information in any way is, to some extent, a data base management system."

Ellen Rony, manager of public relations at Stoneware, Inc. (San Rafael, Calif.), maker of the DBMaster data base manager, says, "File management systems tend to use single-purpose files, they work only with one file at a time. They are generally menu-driven, easy to use, learned very quickly and have limited functionality. They are also less expensive. Data base management systems have more complex procedures, can be complicated to use, have more comprehensive information manipulation capabilities, tend to be expensive, and take longer to learn."

Says Ellen Smith, Software Manager at Readers Digest Services, maker of the ListMaker file manager, "File managers simply manage linear files—a data base management system is more dynamic and you can manipulate data in more elegant ways. Static versus dynamic is the way I would differentiate the two. It's a function of the type of files you're dealing with and the ways you can deal with them."

"A file management system usually does not give you control of data or as many possibilities of control as a data manager," says John Peterson, technical support representative at VisiCorp, San Jose, Calif., maker of VisiFile, a data base manager. "With a data base system you can use different files. A file management system gives you the ability to file customer names and that sort of thing. With a data base manager, you can manipulate the data within files. You have a lot more control with a data base management system. It's harder to learn, but it gives you a lot more flexibility and control."

■ BUYER'S GUIDE/RELATIONAL DATA BASE MANAGERS

Package/ Company	Price	Systems	Minimum Memory	Tutorial Provided?	On-line Help?	Records Per File	Fields Per Record	Characters Per Record
ALADIN ADI	\$595 APL II series; \$795 others	APL II, II+, IIe, APL III; IBM PC, XT, compatibles	APL/64K; MS-DOS 1.1/128K; MS-DOS 2.0/192K	Y	Y	65,535	APLII/150, APLIII/500; IBM/512	4096
ASAP FIVE ASAP Systems, Inc.	\$395	MS-DOS, PC-DOS	192K	Y	Y	limited by disk capacity	unlimited	1014
ASERT CFI Computer Sol.	\$400	COM 8032 w/8050 drive	32K	Y	N	2000	30	254
AURA Softrend	\$495	MS-DOS	256K	Y	Y	limited by disk capacity	256	65,280
BISYBASE International Microcomputer Software	\$275	PC-DOS, MS-DOS, CP/M, CP/M-86	128K	Y	N	hard disk/ 65,000; other/limited by disk capacity	30	480
BUSINESS DATA BASE SYSTEM CMA Microcomputer	\$69.95	TRS I, III, 4	64K	Y	N	256	256	256
CCA DATA CE Software	\$99.50 ATA; \$150 APL	ATA; APL II, II+, IIe, IIc	48K	Y	Y	limited by disk capacity	24	APL/239; ATA/249
CIA RELATIONAL DATA BASE MANAGEMENT SYSTEM Computer Investment Advice	\$295, \$595, \$995	CP/M, MP/M, MS-DOS, Xenix	8-bit/64K; 16-bit/128K	N	Y	64,000	255	25,000
CONCENTRIC INFORMATION PROCESSOR Concentric Data Systems	\$395	MS-DOS	128K	Y	Y	65,000	40	2000
CONDOR 1 Condor Computer Corp.	\$295	CP/M, CP/M-86, PC-DOS, MS-DOS, Turbo-DOS, MP/M-80	8-bit/64K, 16-bit/80K	Y	Y	65,000	127	1K
CONDOR 3 Condor Computer Corp.	\$650	CP/M, CP/M-86, PC-DOS, MS-DOS, Turbo-DOS, MP/M-80	8-bit/64K; 16-bit/80K	Y	Y	65,000	127	1K
CONTROL Phase One Systems	\$595	Oasis	64K	N	Y	65,000	170	512
COURTNEY DATA BASE Courtney Business Systems, Inc.	\$495	IBM PC, XT, compatibles	192K	Y	N	32,000	99	2000
CUSTOM FILE Custom Data	\$395	PC-DOS 2.0	320K	Y	Y	10,000	500	3520

COMPUTERS: APL - APPLE ATA - Atari BUR - Burroughs COM - Commodore	CON TECH - Convergent Technologies DEC P - DEC Professional 350 DEC R - DEC Rainbow EGL - Eagle 1600	EPS - Epson QX-10 GRID - GRID Systems HP 150 - Hewlett-Packard 150 HP 200 - Hewlett-Packard 200 Series IBM - IBM	KAY - Kaypro NCR - NCR Decision Mate 5 Sage - Sage TI PRO - TI Professional	TRS - TRS-80 VIC 9000 - Victor 9000 Wang - Wang PC ZEN - Zenith
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Characters Per Field	# Key Words	# Files Open	Store Files Over 2 Disks?	Customized Input?	Generate Reports?	Customize Reports?	Data Entry Check?	Calcula- tions	Programming Capability?	File Security?
78	APL II/25; OTHER/ 63	APL II/5, APL III/15; IBM/32	N	Y	Y	Y	Y	Y	Y	Y
80	N/A	20	Y	Y	Y	Y	Y	Y	N	Y
30	1	N/A	N	N	N	N/A	N	N	Y	N
255	8	2	N	Y	Y	Y	Y	Y	Y	Y
16	unlimited	1	N	N	Y	Y	Y	Y	N	Y
256	11	6	Y	Y	Y	Y	Y	Y	Y	Y
APL/110; ATA/120	unlimited	1	N	APL/Y; ATA/N	Y	Y	N	Y	Y	Y
255	100	15	\$995 version only	Y	Y	Y	Y	Y	Y	Y
50	40	1	N	Y	Y	Y	Y	Y	Y	Y
127	8	3	Y	Y	Y	Y	Y	Y	Y	Y
127	8	3	Y	Y	Y	Y	Y	Y	Y	Y
255	16	8	N	Y	Y	Y	Y	Y	Y	N
70	unlimited	3	N	Y	Y	Y	Y	Y	Y	N
1022	1	24	N	Y	Y	Y	Y	Y	Y	N

OPERATING SYSTEMS (OS): Apple DOS Apple Pascal CP/M CP/M-86	Cromix DOS+ Flex L-DOS MP/M	MP/M-80 MP/M-86 MS-DOS Multi-DOS PC-DOS	p-system QNX TRS-DOS TRS-Xenix	Turbo-DOS Uniflex Unix Zenix
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■ BUYER'S GUIDE/RELATIONAL DATA BASE MANAGERS

Package/ Company	Price	Systems	Minimum Memory	Tutorial Provided?	On-line Help?	Records Per File	Fields Per Record	Characters Per Record
DATA ACE Computer Software Design	\$495-\$995	L-DOS, TRS-DOS, MS-DOS, PC-DOS, TRS-Xenix	128K	Y	Y	limited by disk capacity	25	255
THE DATA BANK Flowersoft	\$170	APL II+, IIe, IIc	48K	Y	Y	limited by disk capacity	100	2600
DATA BASE MANAGEMENT Monument Computer Service	\$100	APL II, II+, IIe	64K	N	N	limited by disk capacity	unlimited	255
DATA BASE MANAGER Universal Data Research, Inc.	\$295, \$495	IBM PC, ZEN, Flex, Uniflex, MS-DOS, PC-DOS	64K	Y	N	32,700	36	256
DATA BASE MANAGER II Alpha Software Corp.	\$285	IBM PC, XT, compatibles; TI PRO; Wang; NCR	128K	Y	N	32,767	40	2400
DATAEASE Software Solutions	\$600	PC-DOS, MS-DOS, TI PRO, DEC R, VIC 9000	192K	Y	N	65,535	255	4000
DATAFAX Link Systems	\$299	MS-DOS, P-system, Apple pascal	64K	Y	N	255 pp.	N/A	N/A
DATAFLEX Data Access Corp.	\$750/8-bit single-user; \$1250/16- bit multi- user	8-bit=CP/M-80, CP/M-86, MS-DOS, PC-DOS, others; 16- bit=MP/M-86, Turbo- DOS 1.3, others	8-bit/54K; 16-bit/100K	N	Y	64,000	255	255
DATA MANAGER 1 Timeworks, Inc.	\$24.95	COM 64	64K	Y	N	5200	8	240
DATA MANAGER 2 Timeworks, Inc.	\$49.95, \$129	COM 64, IBM PC	COM/64K; IBM/128K	Y	N	COM/2000; IBM/limited by disk capacity	COM/20; IBM/250	COM/230; IBM/4096
DATAVU PLUS Thinkers' Soft, Inc.	\$250	CP/M-80, CP/M-86, MS-DOS, PC-DOS	CP/M-80/64K, others/128K	Y	N	limited by disk capacity	127	16,129
DAX PLUS SuperSoft	\$549	MS-DOS, PC-DOS, CP/M-80	CP/M-80/64K; others/128K	Y	Y	32,767	255	1020
DAYFLO with REPORTFLO Dayflo	\$890	PC-DOS 2.0	256K	Y	Y	65,000	10,000	32,000
dBASE II Ashton-Tate	\$495	CP/M-80, CP/M-86, C-DOS, PC-DOS, MS-DOS, Cromix	48K	Y	Y	65,535	32	1000
dBASE III Ashton-Tate	\$695	PC-DOS	256K	N	Y	over 2 billion	128	4000
DBPACK III Compu-Draw	\$395	CP/M-80, CP/M-86	CP/M-80/64K; CP/M-86/128K	N	Y	32,000	32,000	unlimited
DB 3 Tarbell Electronics	\$249	CP/M-80, CP/M-86 MP/M-86, PC-DOS	CP/M/64K; other/128K	Y	Y	65,535	CP/M/100; others/200	CP/M/4000 others/8000
ENBASE Alan Gelder Software	\$140	TRS-DOS, L-DOS, DOS+, Multi-DOS	48K	Y	N	limited by disk capacity	16	unlimited

Characters Per Field	# Key Words	# Files Open	Store Files Over 2 Disks?	Customized Input?	Generate Reports?	Customize Reports?	Data Entry Check?	Calcula- tions	Programming Capability?	File Security?
255	unlimited	12	N	Y	Y	Y	Y	Y	Y	Y
238	unlimited	1	N	Y	Y	Y	Y	Y	N	N
255	3	6	N	Y	Y	Y	Y	Y	Y	N
50	1	depend- ent on memory	Y	N	Y	Y	Y	Y	\$495 version only	Y
60	5	1	N	Y	Y	Y	N	Y	N	N
255	unlimited	25	N	Y	Y	Y	Y	Y	Y	N
N/A	100	limited by disk capacity	N	Y	N	N	N	N	N	N
255	8-bit/4, 16-bit/9	8-bit/5 16-bit/10	if operating system permits	Y	Y	Y	Y	Y	Y	Y
30	unlimited	1	N	N	Y	Y	N	N	N	N
COM/32; IBM/1560	unlimited	1	Y	Y	Y	Y	Y	Y	N	Y
127	unlimited	8	Y	Y	Y	Y	Y	Y	Y	Y
255	1	1	Y	Y	Y	Y	Y	Y	Y	Y
32,000	10,000	1	N	Y	Y	Y	Y	Y	N	N
254	32	2	N	Y	Y	Y	Y	Y	Y	Y
254	32	10	N	Y	Y	Y	Y	Y	Y	Y
32,000	unlimited	limited by memory	Y	Y	Y	Y	Y	Y	Y	Y
CP/M/4000; others/ 8000	CP/M/ 100; others/200	19	N	Y	Y	Y	Y	Y	Y	N
110	unlimited	1	Y	N	Y	N	Y	Y	Y	Y

■ BUYER'S GUIDE/RELATIONAL DATA BASE MANAGERS

Package/ Company	Price	Systems	Minimum Memory	Tutorial Provided?	On-line Help?	Records Per File	Fields Per Record	Characters Per Record
FILEPRO 16 The Small Computer Co.	\$495	MS-DOS, IBM PC, Unix	256K	Y	Y	16 million	999	4068
INFO-GEN Info-Pros	\$350	MS-DOS, PC-DOS	64K	Y	Y	32,767	50	1020
INFORMATION FILE ORGANIZER Software Technology for Computers	\$175	APL II, II+, IIe, IIc; IBM PC, XT, PCjr, compatibles	128K	Y	Y	limited by disk capacity	40	2400
INFORMATION MANAGEMENT BPI Systems	\$425	PC-DOS, Wang	64K	Y	Y-\$50	limited by disk capacity	100	1200
INFORMATION MANAGEMENT SYSTEM Aims & Plus	\$495	IBM PC; Wang	IBM/256K; Wang/128K	Y	Y	limited by disk capacity	100	1199
INFORMIX Relational Data Base Systems, Inc.	\$795 \$1600- \$12,000	PC-DOS, Unix	IBM/256K; Unix/128K	N	Y	limited by disk capacity	2048	2048
INFOSCOPE Microstuf, Inc.	\$225	PC-DOS	192K	Y	Y	limited by memory	limited by memory	limited by memory
INFOSTAR Micropro International	\$495	CP/M-80, CP/M-86, PC-DOS, TI PRO, DEC R	CP/M/64K; other/96K	Y	Y	65,000	255	4000
INFOSTAR + Micropro International	\$595	PC-DOS	96K	Y	Y	65,000	255	4000
IT'S MY BUSINESS Quest Research Inc.	\$695	MS-DOS 2.0 and up	128K	N	Y	65,535	256	65,535 bytes
KALEIDOSCOPE DBI Software Products	\$695	CP/M, MS-DOS, PC-DOS	64K, 128K recommended	Y	Y	32,000	20 at data mgr. level; 180 at relational level	255 data mgr.; 23,000- relational
KNOWLEDGE MANAGER Micro Data Base Systems, Inc.	\$500 plus options	PC-DOS, MS-DOS, CP/M-86	192K, 500K recommended	Y	Y	65,535	255	65,535
LAN:DATACORE Software Connections	\$495- \$1495	MS-DOS; IBM PC, XT, compatibles; TI PRO; major local area networks	128K	Y	N	1.6 million	512	16,000
LAN:DATASTORE Software Connections	\$495- \$1945	MS-DOS; IBM PC, XT, compatibles; TI PRO; major local area networks	192K	Y	Y	1.6 million	512	16,000
LOGIX Logical Software	\$1000- \$2000	any Unix based OS	128K	Y	Y-\$295	limited by disk capacity	64	2048 bytes
MAG/BASE 1 Mag Software	\$295	CP/M, PC-DOS, MS-DOS, CP/M-86	CP/M/64K; MS-DOS/128K	N	N	CP/M- 999,999; MS- DOS-32,000	999	4096

Characters Per Field	# Key Words	# Files Open	Store Files Over 2 Disks?	Customized Input?	Generate Reports?	Customize Reports?	Data Entry Check?	Calcula- tions	Programming Capability?	File Security?
999	999	10	N	Y	Y	Y	Y	Y	Y	Y
126	10	4	Y	Y	Y	Y	Y	Y	Y	N
64	9	6	Y	Y	Y	Y	Y	Y	N	Y
76	100	1	Y	Y	Y	Y	Y	Y	N	Y
76	5	1	Y	Y	Y	Y	Y	Y	N	Y
2048	unlimited	IBM/8, Unix/6	N	Y	Y	Y	Y	Y	Y	Unix version only
limited by memory	unlimited	8	N	Y	Y	Y	Y	Y	Y	N
255	120	16 min., 64 max.	Y	N	Y	Y	Y	Y	N	N
255	120	16 min., 64 max.	Y	Y	Y	Y	Y	Y	Y	N
65,535 bytes for text fields	256	127	Y	Y	Y	Y	Y	Y	Y	Y
255	unlimited	9	Y	Y	Y	Y	Y	Y	Y	Y
65,535	un- limited	un- limited	N	Y	Y	Y	Y	Y	Y	Y
4000	16	unlimited	N	Y	N	N	Y	Y	Y	Y
4000	16	15	N	Y	Y	Y	Y	Y	N	Y
127 bytes	64	20	Y	Y	Y	Y	Y	Y	Y	Y
50	99	5	Y	N	Y	Y	Y	Y	Y	Y

■ BUYER'S GUIDE/RELATIONAL DATA BASE MANAGERS

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MAG/BASE 2 Mag Software	\$495	CP/M, PC-DOS, MS-DOS, CP/M-86	CP/M/64K; MS-DOS/128K	N	N	CP/M- 999,999; MS- DOS-32,000	999	4096
MAG/BASE 3 Mag Software	\$795	CP/M, PC-DOS, MS-DOS, CP/M-86	CP/M/64K; MS-DOS/128K	N	N	CP/M- 999,999; MS- DOS-32,000	999	4096
MDBS III Micro Data Base Systems	\$3100- \$15,000	PC-DOS, MS-DOS, CP/M, MP/M, CP/M- 86, MP/M-86, Turbo- DOS, TRS-DOS, Unix, Xenix	Z80/64K; others-128K	Y	Y	limited by disk capacity	65,535	65,535
METAFILE Sensor Based Systems	\$995	PC-DOS	128K	Y	Y	64,000	250	250
MMG DATA MANAGER II MMG Micro Software	\$99.95	ATA (all)	40K	Y	N	1875	20	255
NPL DeskTop Software	\$500	MS-DOS; DEC P; HP 200; APL II, III	256K	Y	N	limited by disk capacity	200	4000
OPTIMUM Uveon Computer Systems, Inc.	\$595	most popular OS	8-bit/64K; 16-bit/128K	Y	Y	limited by disk capacity	50	12,500
PC/FOCUS Information Builders, Inc.	\$1595	IBM, TI PRO, Wang	512K	N	Y	limited by hard disk capacity	250	4096
PD BASE IOTC, Inc.	\$595 single user, \$795 multi-user, \$425 IBM, APL	Sage; IBM PC, XT; APL II+, IIe	Single/multi/ 128K; IBM/64K	Y	Y	limited by disk capacity	unlimited	unlimited
PERSONAL PEARL Pearlsoft, Inc.	\$295	8-bit/CP/M; 16- bit/PC-DOS; MS-DOS; CP/M-86	8-bit/52K; 16- bit/128K	Y	Y	limited by disk capacity	250	20,000
POWER BASE Power Base Systems, Inc.	\$395	PC-DOS	256K	Y	Y	65,000	64,000	1600
PRACTIBASE Practicorp International	\$99.95	PC-DOS	128K	Y	Y	limited by disk capacity	60	2000
PROBASE Data Technology Industries	\$300	CP/M, CP/M-86, PC-DOS, MS-DOS	CP/M/64K; MS- DOS/128K	Y	Y	65,536	64	1024
PROPEL PRO Computing	\$1195	MS-DOS, PC-DOS	512K	Y	Y	limited by disk capacity	64	unlimited
R:BASE 4000 Microrim	\$495 IBM; \$795 CTOS/ BTOS	IBM PC, XT, compatibles; CON TECH; BVR; HP 150, TI PRO; DEC R; GRID	256K	Y	Y	2.5 billion	400	1530
RDM Interactive Technology	\$995	DEC P	56K	N	Y	65	225	512 bytes
RECORDS MANAGER Datamension Corp.	\$499	MS-DOS	192K	Y	Y	510	21	2000

Characters Per Field	# Key Words	# Files Open	Store Files Over 2 Disks?	Customized Input?	Generate Reports?	Customize Reports?	Data Entry Check?	Calcula- tions	Programming Capability?	File Security?
50	99	5	Y	N	Y	Y	Y	Y	Y	Y
50	99	5	Y	Y	Y	Y	Y	Y	Y	Y
65,535	un- limited	un- limited	Y	Y	Y	Y	Y	Y	Y	Y
63K	3	5	Y	Y	Y	Y	Y	Y	Y	Y
255	3	3	N	N	Y	Y	Y	Y	Y	Y
999	20	12	N	Y	Y	Y	Y	Y	Y	N
255	un- limited	10	N	Y	Y	Y	Y	Y	Y	Y
255	250	16	N	Y	Y	Y	Y	Y	Y	Y
unlimited	1	single/ multi- 32; IBM-16	N	Y	Y	Y	Y	Y	Y	Y
1920	250	8- bit/5; 16- bit/10	N	Y	Y	Y	N	Y	N	N
80	6	16	N	Y	Y	Y	Y	Y	N	N
254	60	3	N	Y	Y	Y	Y	Y	Y	Y
64	10	6	Y	Y	Y	Y	Y	Y	Y	Y
255	4	1	Y	Y	Y	Y	Y	Y	Y	N
1530	400	40	N	Y	Y	Y	Y	Y	Y	Y
256	un- limited	4	Y	Y	Y	Y	Y	Y	Y	Y
100	9	1	N	Y	Y	Y	N	N	N	N

BUYER'S GUIDE/RELATIONAL DATA BASE MANAGERS

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RESQ 2.0 KeySoftware	\$295	MS-DOS, PC-DOS	128K	Y	Y	limited by disk capacity	255	20,400
REVELATION Cosmos	\$950	IBM PC, XT, compatibles	320K	Y	Y	limited by disk capacity	65,535	65,535
RL-1 RELATIONAL DATA ABW	\$495	PC-DOS, MS-DOS	128K	Y	Y	65,535	unlimited	unlimited
RTFILE Contel Information Systems	\$750	DEC P	48K	Y	N	65,000	512 bytes	255
SAVVY PC Excalibur Technologies	\$395	APL IIe, II+; IBM PC, XT, compatibles	64K	Y	Y	20,000	255	1000
SELECTOR V Micro-AP	\$450	MS-DOS, PC-DOS, CP/M, CP/M-86, MP/M-86	8-bit/52K; 16-bit/96K	Y	Y	99,999	89	5000
THE SENSIBLE SOLUTION O'Hanlon Computer Systems	\$695	MS-DOS, PC-DOS, CP/M, Turbo-DOS	CP/M/48K; other/ 128K	Y	Y	limited by disk capacity	unlimited	unlimited
SERIES ONE PLUS Executec Corp.	\$495	MS-DOS, PC-DOS	192K	Y	Y	limited by disk capacity	35	1920
SIMPLE TCS Software, Inc.	varies by dealer	IBM PC, XT, compatibles; DEC R; EGL; EPS; Kay; TI PRO; VIC 9000; Wang; ZEN; CP/M, MS-DOS	CP/M/56K; MS- DOS/88K	Y	Y	16.6 million	150	1000
SUPERBASE 64 Decision Software	\$99	COM 64, COM B Series	64K	Y	Y	limited by disk capacity	127	1108
10-BASE Fox Research, Inc.	\$495	PC-DOS, MS-DOS	192K	Y	Y	limited by disk capacity	unlimited	32,000
UNIFY Unify Corp.	\$1495	IBM XT; TRS 16B; DEC R	256K	Y	Y	2 billion	256	25,600
VERSA FORM BUSINESS FORM DATA BASE Applied Software Technology, Inc.	\$389 MS- DOS, APL III; \$289 Apple DOS 3.3	MS-DOS, APL II series, III	MS-DOS, APL III/ 128; APL II Series/ 64K	Y	Y	limited by disk capacity	45-75	4000
VERSA FORM XL Applied Software Technology, Inc.	\$449	IBM PC, XT, compatibles	192K	Y	Y	limited by disk capacity	75	4000
ZIM (entity relationship model) Zanthe	\$1000 MS-DOS, PC-DOS; \$1500 QNX	MS-DOS, PC- DOS, QNX	MS-DOS, PC-DOS/ 320K; QNX/400K	Y	N	limited by disk capacity	unlimited	unlimited

Characters Per Field	# Key Words	# Files Open	Store Files Over 2 Disks?	Customized Input?	Generate Reports?	Customize Reports?	Data Entry Check?	Calcula- tions	Programming Capability?	File Security?
80	10	2	Y	Y	Y	Y	Y	Y	N	Y
65,535	un- limited	5000	N	Y	Y	Y	Y	Y	Y	Y
1023	un- limited	un- limited	N	Y	Y	Y	Y	Y	Y	N
255	5	5	N	Y	Y	Y	Y	Y	Y	Y
255	255	un- limited	Y	Y	Y	Y	Y	Y	Y	Y
129	99	7	N	Y	Y	Y	Y	Y	Y	N
255	10	16	N	Y	Y	Y	Y	Y	Y	Y
80	4	1	Y	Y	Y	Y	Y	N	N	N
250	20	1	N	N	Y	Y	N	Y	N	version C only
255 text	1	2	N	Y	Y	Y	Y	Y	Y	Y
9999	un- limited	16	N	Y	Y	Y	N	Y	Y	N
256	1	un- limited	Y	Y	Y	Y	Y	Y	Y	Y
78	un- limited	1	Y	Y	Y	Y	Y	Y	N	N
78	un- limited	50	Y	Y	Y	Y	Y	Y	Y	N
un- limited	un- limited	un- limited	N	Y	Y	Y	Y	Y	Y	N

Relational Data Base Software Publishers

ABW
P.O. Box M104
Ann Arbor, MI 48106
(313) 663-3011

ADI
1215 Howe Ave.
Sacramento, CA 95825
(916) 925-2229

AIMS & PLUS
5000 E. Ben White
Austin, TX 78741
(512) 385-0702

ALAN GELDER SOFTWARE
P.O. Box 11721
San Francisco, CA 94101
(415) 681-9371

ALPHA SOFTWARE CORP.
30 B St.
Burlington, MA 01803
(800) 451-1018
(617) 229-2924

APPLIED SOFTWARE TECHNOLOGY, INC.
170 Knowles Dr.
Los Gatos, CA 95030
(408) 370-2662

ASAP SYSTEMS, INC.
2425 Porter St.
Suite 14
Soquel, CA 95073
(408) 476-3935

ASHTON-TATE
10150 W. Jefferson Blvd.
Culver City, CA 90230
(213) 204-5570

BPI SYSTEMS
3423 Guadalupe
Austin, TX 78705
(512) 454-2801

CE SOFTWARE
Div. of Custom Electronics, Inc.
238 Exchange St.
Chicopee, MA 01013
(413) 592-4761

CFI COMPUTER SOLUTIONS
201 W. 92nd St.
New York, NY 10025
(212) 724-1711

CMA MICROCOMPUTER
Subsidiary of Charles Mann & Associates
55722 San Jose Trail
Yucca Valley, CA 92284
(619) 365-9718

COMPU-DRAW
1227 Golerhouse
Rochester, NY 14620
(716) 454-3188

COMPUTER INVESTMENT ADVICE, INC.
505 Mill St.
Corapolis, PA 15108
(412) 262-5661

COMPUTER SOFTWARE DESIGN
1911 Wright Circle
Anaheim, CA 92806
(714) 634-9012

CONCENTRIC DATA SYSTEMS, INC.
18 Lyman St.
Westboro, MA 01581
(617) 366-1122

CONDOR COMPUTER CORP.
2051 S. State St.
Ann Arbor, MI 48104
(800) 882-8000
(415) 424-8311

CONTEL INFORMATION SYSTEMS
4330 East-West Hwy. #200
Bethesda, MD 20814
(301) 654-9120

COSMOS
19530 Pacific Hwy. S.
Seattle, WA 98188
(206) 824-9942

COURTNEY BUSINESS SYSTEMS, INC.
710 W. Main St.
Arlington, TX 76013
(817) 265-2132

CUSTOM DATA
P.O. Box 1408
Salt Lake City, UT 84110
(801) 322-0708

DATA ACCESS CORP.
8525 S.W. 129 Terrace
Miami, FL 33156
(305) 238-0012

DATAMENSION CORP.
615 Academy Dr.
Northbrook, IL 60062
(312) 564-5060

DATA TECHNOLOGY INDUSTRIES
701 Whitney St.
San Leandro, CA 94577
(800) 258-7071
(800) 258-7070

DAYFLO
2500 Michelson Dr.
Bldg. 400
Irvine, CA 92715
(800) 232-9356
(800) 732-9356

DBi SOFTWARE PRODUCTS
(Data Basic, Inc.)
One Energy Place
5805 Pickard Rd.
Mount Pleasant, MI 48858
(517) 772-5055

DESKTOP SOFTWARE
228 Alexander St.
Princeton, NJ 07608
(609) 924-7111

EXCALIBUR TECHNOLOGIES
P.O. Box 26448
Albuquerque, NM 87125
(505) 242-3333

EXECUTE CORP.
12200 Park Central Dr.
Dallas, TX 75251
(214) 239-8080

FLOWERSOFT
564 Terra Ct.
Manteca, CA 95336
(209) 239-2116

FOX RESEARCH, INC.
7005 Corporate Way
Dayton, OH 45459
(513) 433-2238

INFO-PROS
2102 Business Center Dr.
Irvine, CA 92715
(714) 851-8975

INFORMATION BUILDERS, INC.
1250 Broadway
New York, NY 10001
(212) 736-4433

INTERACTIVE TECHNOLOGY
1225 N.W. Murray Rd.
Portland, OR 97229
(503) 644-0111

INTERNATIONAL MICROCOMPUTER SOFTWARE
633 5th Ave.
San Rafael, CA 94901
(415) 454-7101

IOTC, INC.
211 S. 3rd St.
Laramie, WY 82070
(307) 751-5818

KEYSOFTWARE, INC.
1000 Skokie Blvd.
Suite 200
Wilmette, IL 60091
(312) 256-6776

LINK SYSTEMS
1452 2nd St.
Santa Monica, CA 90401
(213) 394-3664

LOGICAL SOFTWARE
17 Mount Auburn St.
Cambridge, MA 02138
(617) 864-0137

MAG SOFTWARE
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Apple II	Laser Battle Ground	58011	G Space	12.99	TRS 80	Parkway	58005	G Space	12.99
Apple II	Laser Collector	58117	G Space	12.99	TRS 80	Titan	58002	G Space	12.99
Apple II	Livestock Stampede	54066	G Adventure	12.99	Blank	Floppy disks - 10 pack	99055-10	(See above)	24.95

*B = Business E = Educational G = Game

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Last Word

SOFTWARE FOR THE TEACHER

TEACHERS WHO WANT TO KNOW more about educational software programs can now get reviews and opinions from other educators from SchoolNet, a computerized information network with local access in most cities. Users can call up reviews of packages and add their own opinions, or they can submit their own reviews to the network.

SchoolNet is offered by Techware Telecommunications Services (Eugene, Ore.), which describes the network as an open forum in which teachers can present problems and engage in discussions with their colleagues around the country. Subscribers can also use the service to purchase computer supplies and educational programs from an on-line store. If SchoolNet subscribers have problems that require professional consulting, they may direct their



questions to a teleconsulting service. If an educator has a particularly tough problem to solve, help is available from well-known educational and personal computer consultants, Techware says.

Subscribers pay an initial \$200 connect fee, a \$100 yearly membership fee, and a \$10 monthly charge. On-line charges vary according to the time of day during which the network is used. For more information, contact Techware Telecommunications Services, 474 Willamette Street, Suite 201, Eugene, OR 97401; (503) 484-0520.

OXFORD DICTIONARY TO GO ON-LINE

THE GUARDIANS OF THE English language are ready to take the plunge into the electronic age.

The Oxford University Press in Oxford, England, has announced its intention to computerize the 13-volume Oxford English Dictionary at a cost of \$10 million. The O.E.D. will be computerized over the next several years into the N.O.E.D., the New Oxford English Dictionary.

When the project is finally

completed, the N.O.E.D. will be the largest single electronic dictionary data base in existence.

The dictionary is widely considered the last word on the English language and runs 19,170 pages in 13 bound volumes with illustrations and definitions of nearly 500,000 words. It has only been published once in its entirety—in 1928. The research was done manually, with lexicographers devoting a slip of paper to each word. Those slips of paper, which have been preserved in the Bodleian Library at Oxford, weigh some 30 tons.

MAXIMIZE YOUR PEOPLE INVESTMENT

WORKERS AND WHAT THEY think is an ever-growing concern of management throughout American industry.

To aid management professionals in finding out what's on workers' minds, MTR Systems is marketing Climate Attitude Survey Sequence (CASS), a master disk that contains 15 comprehensive categories which address major areas of managerial and employee concern. There are 370 statements available within the categories to help managers customize employee surveys.

Developed by a team of management psychologists, the CASS survey categories include: work responsibilities, immediate supervisor, top management, pay, company reputation and future.

MTR says CASS will benefit a company by creating customized surveys tailored to different departments. The company says the survey will cost a fraction of other surveying methods, may be changed and used repeatedly and will provide immediate results.

For more information: James N. Cosmides, MTR Systems, Inc., 801 N. Cass Ave., Westmont, IL 60559; (312) 789-3830.



SELF-HELP SOFTWARE

PSYCOMP, THE CALIFORNIA-based self-help software manufacturer, has released four new programs which provide step-by-step guidance aimed at helping personal computer users solve their own psychological problems.

The interactive programs are based on clinically proven techniques, according to PSYCOMP, that were devel-

oped by Dr. Robert Reitman, a leading cognitive therapist.

The four programs are: Handling Relationship Problems, Coping With Stress, Handling Depressed Feelings and Treating Sexual Problems. All four programs retail for \$89.95 and are compatible with IBM and Apple systems.

For more information: PSYCOMP, 22055 Clarendon St., Suite 101, Woodland Hills, CA 91367; (818) 992-4884.

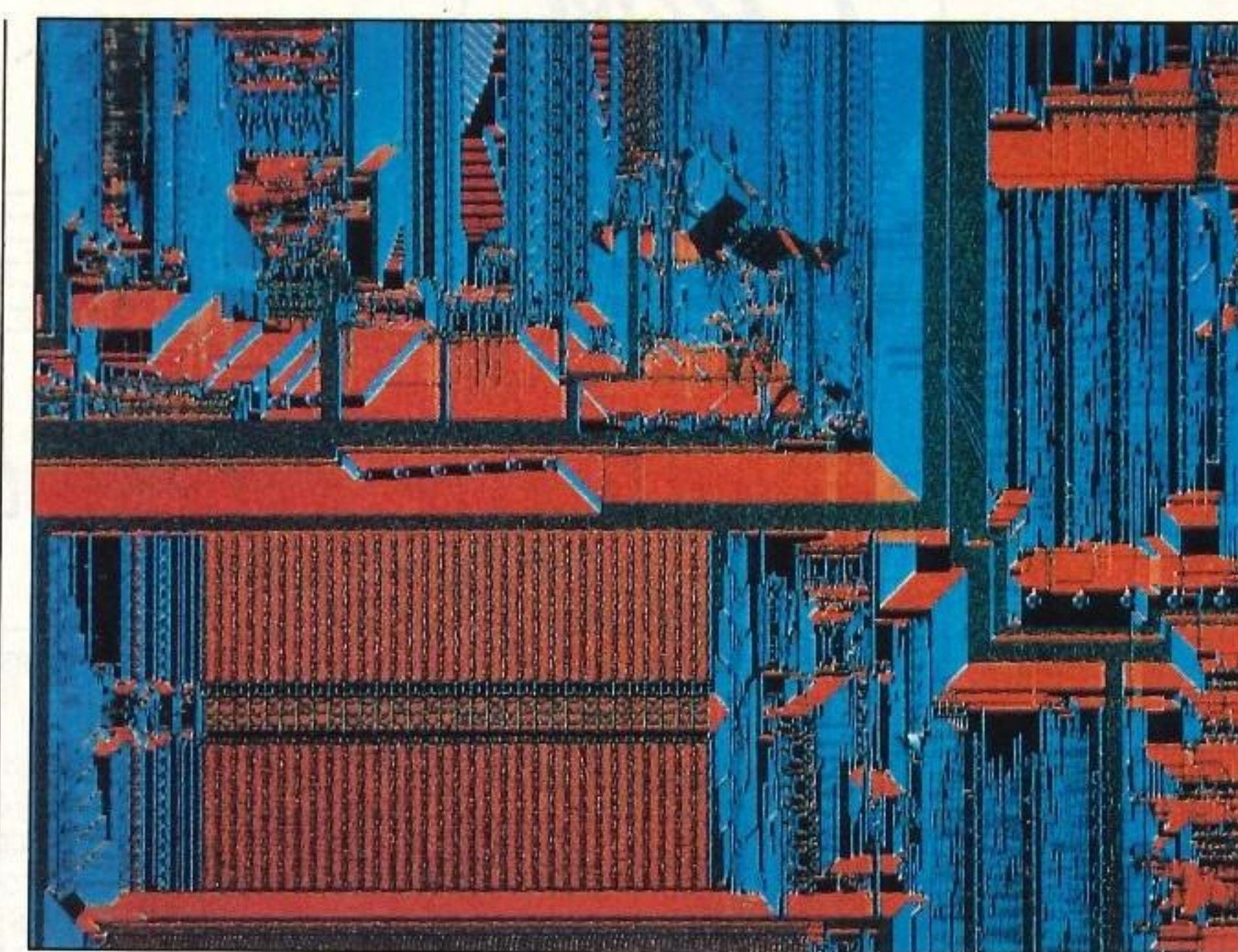
AT&T MICROSCAPES A CHIP OFF THE OLD ART EXHIBITION

"THE DEVIL WHISPERED BEHIND the leaves, 'It's pretty, but is it Art?'"—from *The Conundrum of the Workshops* by Rudyard Kipling.

What does art have to do with software? The people at AT&T Technologies have the answer in a word, "Microscapes."

Microscapes is a photomicrography exhibit which focuses on the seldom seen world of advanced developments in microelectronics and lightwave communications. The two-year, 12-city nationwide tour of the 47 photographs premiered earlier this year at the Chicago Museum of Science and Industry as part of a celebration of that institution's 50th anniversary.

"The exhibit portrays a very different and unusual technology," says Len Stern, AT&T Technologies director



of photography. "Information and communications technologies have come about as a result of incredible growth, but it's been invisible—one no one has an image of it."

Microscapes provides that image in striking photos, most of them taken by AT&T Technologies photographers and scientific researchers at exposure speeds as high as 1/720,000th of a second and with magnifications approaching 67,000 times actual size.

Subjects include: a ruby

crystal with laser radiation; a laser irradiated silicon wafer; a microprocessor chip; connector pins of a plug-in circuit; and others.

"It's exciting to explore this technology as art," Stern says. "We've added images to a force that is shaping our society."

For schedule information on Microscapes: Ellen Horowitz, The Association of Science-Technology Centers, 1413 K Street N.W., Washington, D.C. 20005; (202) 371-1171.

COMPUTER PARTY

INTERPERSONAL SOFTWARE, A New York City-based company, is applying the concept of the Tupperware party to the computer age by offering at-home computer learning parties. "We go into your home with our computer, and you can invite your friends over and learn about computing together in a relaxed environment," says Linda Cooper, one of the founders of the company.

The company's primary educational target is women. Cooper and co-founder Laurel Gruenwald say that over 500 women have attended workshops so far. The primary method of attracting clients, says Cooper, has been



word of mouth. Interpersonal Software does take men by referrals, has worked with husbands and wives together, and is beginning to expand into businesses, as well. Cooper and Gruenwald offer two-hour workshops covering such topics as basic

definitions, how to set up and use the machine, the functions of the various parts of a system, software, and the importance of training manuals and documentation. "It depends on the group," says Cooper. "Sometimes we do programming and sometimes we go into different types of software." Hands-on training is included. Participants learn to link CPUs, printers, disk drives and monitors into a system.

The fee for the workshop is \$35 per person, with a 25 percent discount for the hostess. Reaction has been so positive says Cooper, that expansion to other cities is being considered. For more information, contact Interpersonal Software at (212) 924-8424.

COLLEGE SCHOLARSHIP CONTEST

A \$10,000 COLLEGE SCHOLARSHIP will be awarded by the Software City retail chain to the high school student who creates the most marketable software program.

The contest is open to any applicant who has graduated or will graduate from high school after January 1, 1984. The entry deadline is December 31, 1984. In addition to the top award of \$10,000 payable at the rate of \$2500 per year during four years at any accredited college, four \$1000 scholarships will be available at \$250 per year.

Software may be submitted in any of the following categories: business applications, education, home applications, recreation and systems software. (More than one prize can come from a specific category. Software City also retains the right not to award prizes if they feel there are no qualified entries.) All scholarship winners must provide Software City with an exclusive license to market the programs, for which they will receive a 25 percent royalty.

All programs must be formatted to run on one of the following computers: IBM Personal Computer, Apple II or IIe, Atari, Commodore 64 or Adam. (Applicants wishing to submit an application for any other system should contact the scholarship director.)

All programs must be submitted on Software City's house brand of PermaData disks or cassettes. Requests for more information and scholarship applications should be directed to Software City Corporate Headquarters, 1415 Queen Anne Road, Teaneck, NJ 07666, Attention: Scholarship Director.

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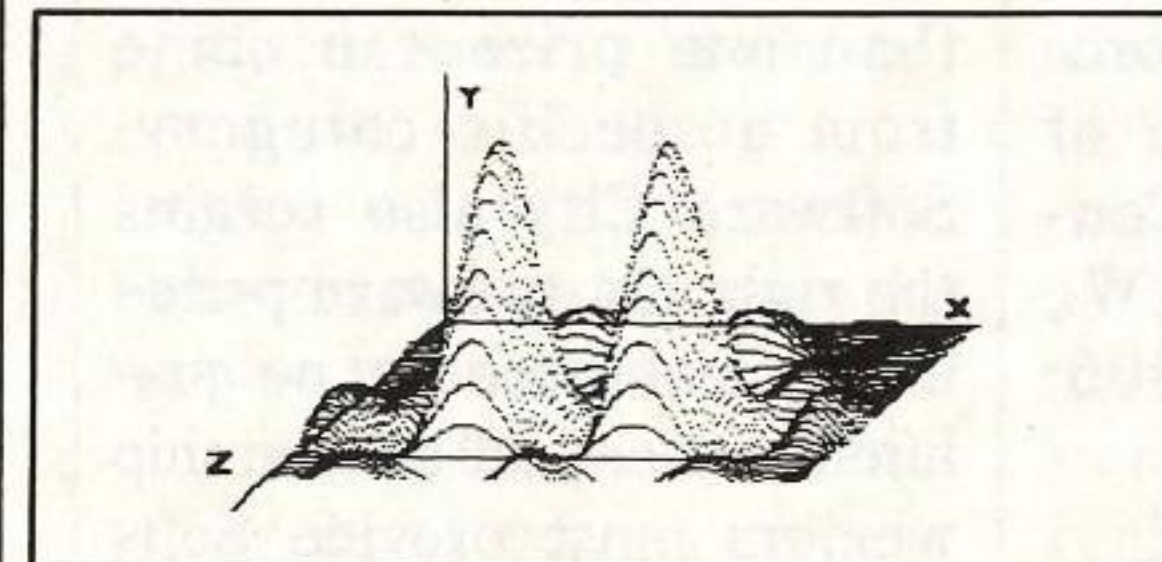
STATISTICAL ANALYSIS I: This menu driven program performs LINEAR REGRESSION analysis, determines the mean, standard deviation and plots the frequency distribution of user-supplied data sets.

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For APPLE II (48K) and IBM PC (64K)\$50.00



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For APPLE II and IBM PC \$150.00

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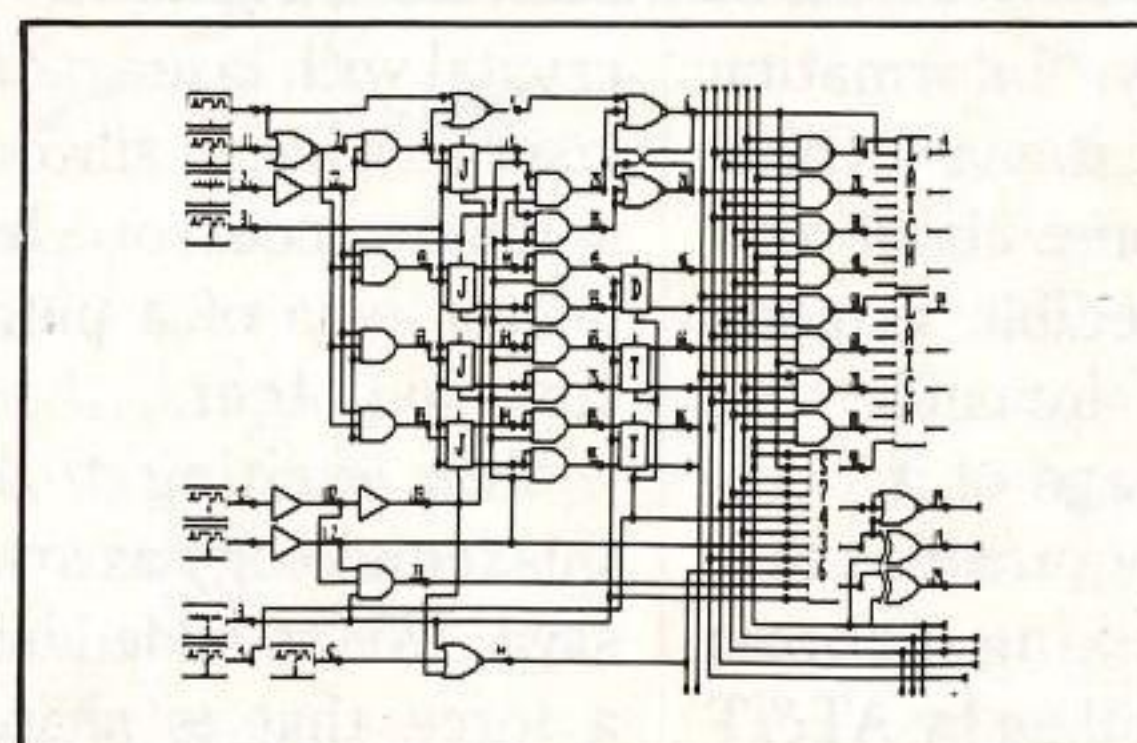
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Account Listings
Customer Balances

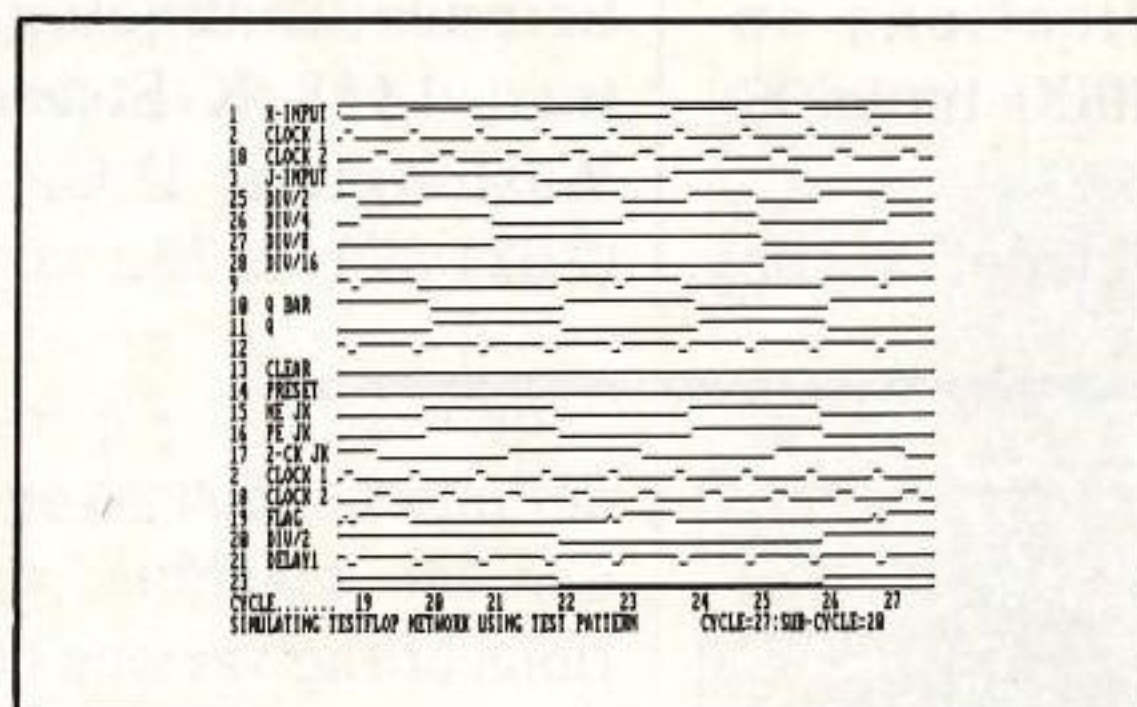
For APPLE II and IBM PC (2 DRIVES) .. \$150.00

MICRO-LOGIC

An interactive graphics program for designing and simulating digital logic systems. Using the built-in graphics module, the user creates a logic diagram consisting of AND, OR, NAND, NOR, EX-OR, D, T, JK FLIP FLOP and powerful 16 pin user-defined MACRO functions. A typical page of a logic diagram looks like this:



The system provides on-screen editors for NETWORKS/MACROS DATA CHANNELS, CLOCK WAVEFORMS and GATES. GATE attributes include DELAY, TRUTH TABLE, NAME and I/O clocking.



The system is available for Apple II and IBM PC computers. A non-graphics version is available for CP/M 2.2 It uses the network editor to create netlists and text printer plots to display simulation results. All versions require 2- 5 1/4" disk drives.

For APPLE II, IBM PC (192K) and CP/M (70K) \$450.00
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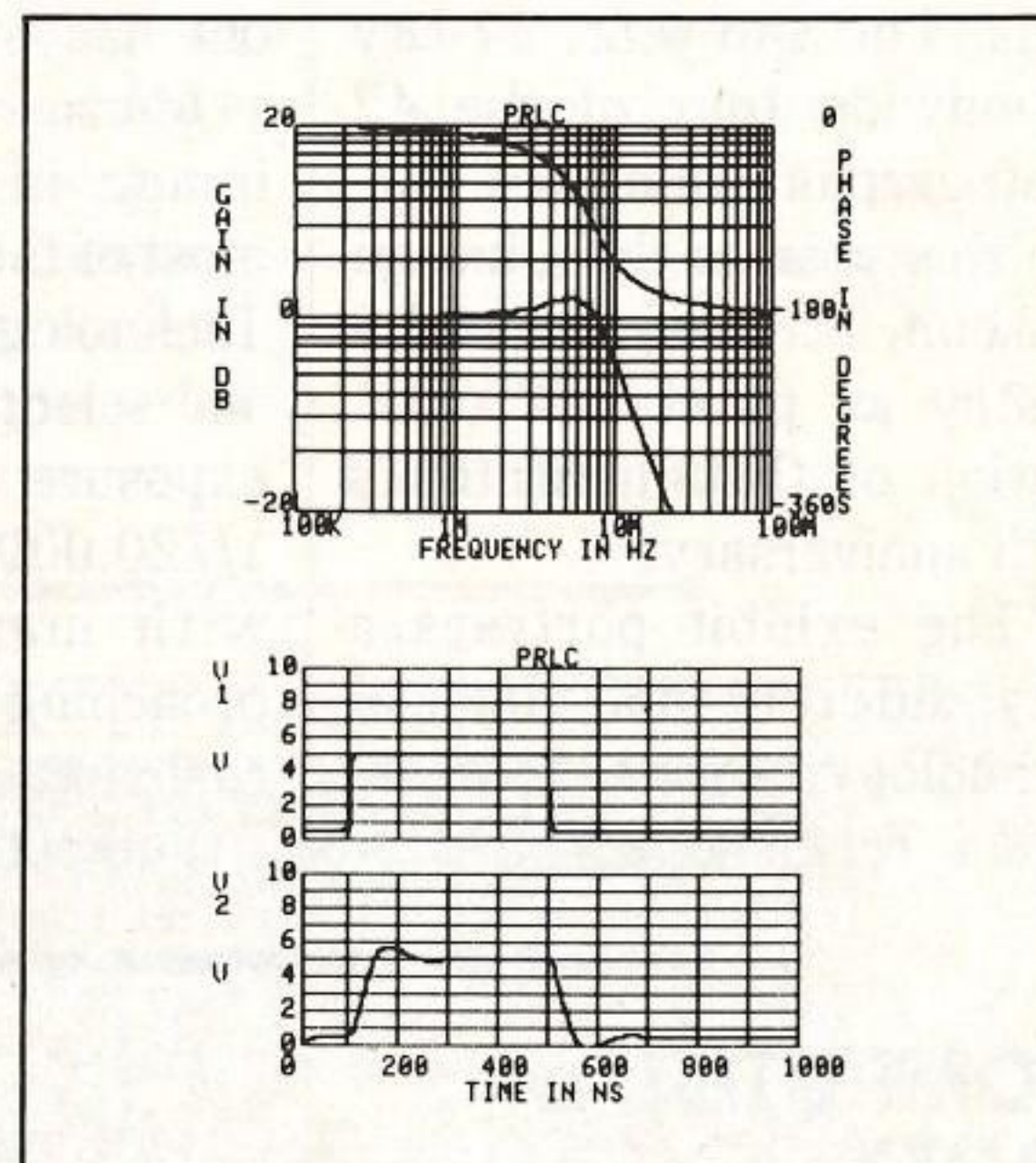
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For APPLE II and IBM PC \$75.00

MICRO-CAP

Microcomputer Circuit Analysis Program

Tired of trial & error circuit design? Analyze and debug your designs before you build them. With MICRO-CAP you simply sketch your circuit diagram on the CRT screen and run an AC, DC or TRANSIENT ANALYSIS. Your circuit may consist of RESISTORS, CAPACITORS, INDUCTORS, DIODES, BATTERIES, BIPOLAR or MOS TRANSISTORS, OPAMPS TRANSFORMERS, and SINSUSOIDAL or USER-DEFINED TIME DEPENDENT VOLTAGE SOURCES. MICRO-CAP can analyze any such network containing up to 40 separate nodes. Includes a user controlled MACRO library for modelling complex components such as OPAMPS and Transistors.



For APPLE II and IBM PC computers. A non-graphics version using an on-screen editor to enter networks and text printer plots to display simulation results is available for CP/M (2.2- 5 1/4" SSSD) systems. Requires 2 disk drives.

For APPLE II, IBM PC (192K) and CP/M (70K) \$475.00
MANUAL and DEMO DISKETTE \$50.00

ORDERING INSTRUCTIONS: All programs are supplied on disk and run on Apple II (64K) or IBM PC (128K) with a single disk drive unless otherwise noted. Detailed instructions included. Orders are shipped within 5 days. Card users include card number. Add \$2.50 postage and handling with each order. California residents add 6 1/2% sales tax. Foreign orders add \$5.00 postage and handling per product.



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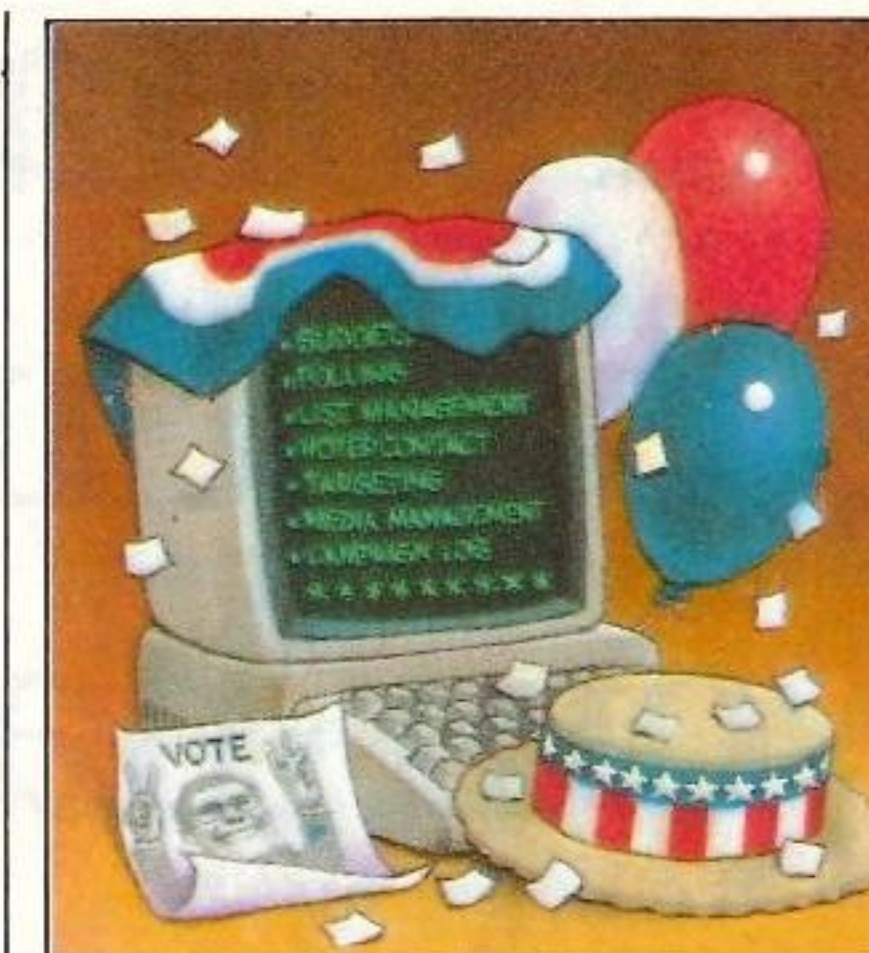
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THE POLITICAL MACHINE

THE MOST IMPORTANT LOCAL political workers of the 1984 election campaign may be personal computers, according to the designers of Politech I, a software package that can help manage political campaigns.

Priced at \$950, Politech I is designed for campaigns with budgets as low as \$10,000 and for campaign staffs with no programming expertise. A special speed entry feature is designed to make data input simple enough for volunteers with minimum instruction, says Stanley Greenberg, a member of the Politech Limited Partnership (Ellington, Conn.), which created the program.

The package contains



seven integrated modules: List Management, Voter Contact, Targeting, Budgeting, Media Management, Poll Sampling, and Campaign Log. Politech says the program can take over the tedious, time-consuming tasks usually performed by volunteers, freeing them up for work requiring personal contact. The software also is designed to reduce the need for expensive outside suppliers and consultants for such ser-

ROADSEARCH, A COMPUTERIZED ROAD ATLAS

TIRED OF FUMBLING WITH unwieldy road maps? Do the words "you can't miss it" have a hollow ring? Then Roadsearch, a new computerized road atlas, may be just what you need.

Roadsearch, from Columbia Software of Columbia, Md., was designed for anyone who travels over the Interstate highway system. It helps you plan your trips by showing optimum routes, mileage, travel times and fuel usage information in different formats.

The Roadsearch data base consists of 406 cities and road junctions throughout the United States and Canada. You enter the departing and destination cities on your Apple II or IIe with DOS 3.3 or Commodore 64, and Roadsearch computes the shortest route. The resulting information can then be printed



out as a customized map to speed your journey.

Also available from Columbia is a program called Routeplanner, which requires an Apple II Plus with 48k and Applesoft. Routeplanner is aimed at traveling salespeople who must plan trips which include multiple stops. Routeplanner can compute the shortest route in less than five minutes and can supply a coherent plan for a multistop sales trip.

In addition, Route-

vices as sample polling and personalized letters.

"Politech I can pay for itself after a single 1000-piece mailing by eliminating the dollar per name charge from a direct mail house," claims Partnership member William McMillen.

Politech I has taken some test runs with such users as Rep. Bob Carr (D-Michigan), Rep. Nancy Johnson (R-Connecticut) and Assemblyman Louis Pappan (D-California). According to the company, Politech I runs on the IBM Personal Computer, many compatibles, and CP/M-86-based systems. For more information, write William Miller, Director of Marketing, Politech Limited Partnership, P.O. Box 537, 31 Main Street, Ellington CT 06029, or call (203) 875-1234.

'JUST THE FACTS' FROM LEXIS AND NEXIS SERVICES

THE OLD "DRAGNET" TV series featured Jack Webb as Sgt. Joe Friday. In the course of his daily police work, viewers time and again heard Friday beseech crime victims to give him "just the facts."

That's the goal of two data base services, Lexis and Nexis, provided by Mead Data Central of Dayton, Ohio. Nexis, which has been on-line since 1980, is an information retrieval service that catalogs newspapers, wire services and magazines from ABA Banking Journal to Xinhua (the New China News Agency).

Nexis, which began in 1973, is a specialized legal research data base used by law firms, judges, federal and state agencies, corporate law departments and law schools.

Unlike other news retrieval services, Nexis provides the subscriber with the full text of articles.

Nexis has a one-time installation fee of \$200 and is available for a monthly \$50 subscription charge. Connect time is \$20 per hour. There are also varying fees per search of the data base ranging from \$18 to search all Nexis files to \$9 to search a specific publication. Lexis has the same installation fee, but will cost \$100 a month.

Mead Data will lease hardware for use with the services, but Lexis and Nexis can currently be accessed with an IBM Personal Computer, IBM 3101, IBM Displaywriter and Televideo 950. The company is preparing software for users of several other systems.

For more information: Paul F. Nezi, vice-president marketing operations, Mead Data Central, P.O. Box 1830, Dayton, OH 45401; (513) 865-6958.

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SOFTWARE BILL INTRODUCED IN LOUISIANA

STATE SENATOR WILLIAM Atkins has introduced a bill in the state legislature which could make Louisiana the first state in the country to adopt a measure to restrict unauthorized duplication and distribution of personal computer software.

Entitled the "Software License Enforcement Act," the proposed law provides for "the enforcement of computer software license agreements." According to Louisiana Secretary of State Jim Brown, unauthorized duplication of software cost publishers more than \$360 million in lost revenues in 1983. The figure could soar to over \$2.5 billion this year. The bill is currently being debated in committee, but could be acted upon by the legislature before it recesses for the summer.

Under terms of the proposed legislation, a software purchaser implicitly accepts

applicable copyright terms if: 1) a legend is clearly affixed to the software; 2) the legend states that any use of the software will constitute acceptance of the terms of the licensing agreement and states that any opening of the package demonstrates acceptance of the terms; and 3) if title to the software has been retained by the publisher; provisions to preclude copying can be made.

Atkins, a Democrat from the northeastern Louisiana town of Jonesville, uses TRS-80 Models II and III along with a spreadsheet to track inventories and other aspects of his own vending machine business.

"By no means am I an expert on the computer industry or computers, but I do think that current federal copyright laws do not adequately protect the computer industry," Atkins says. "A program that is mass produced and then sold (without adherence to copyright laws) has a devastating effect on the computer industry."

ROYAL COMPUTING

COMMODORE BUSINESS Machines (UK) Ltd. has become the first personal computer manufacturer to be granted the Royal Warrant of Appointment by Her Majesty the Queen, thus joining the ranks of other warranted suppliers of regal products—they run from marmalade to floor wax. The official purveyors of computational requisites to Her Majesty have not formally confirmed that the halls of Buckingham Palace will soon begin reverberating with the sounds of the Royal Family playing Jumpman or Donkey Kong. But since January of this year, all Commodore (UK) machines have been em-



blazoned with the legend "By appointment to Her Majesty the Queen."

The Royal Warrant is a deadly serious, hotly coveted commercial perk in Britain. Inside story is that, in the land of Gilbert & Sullivan, Commodore had a bit of a natural edge, namewise.

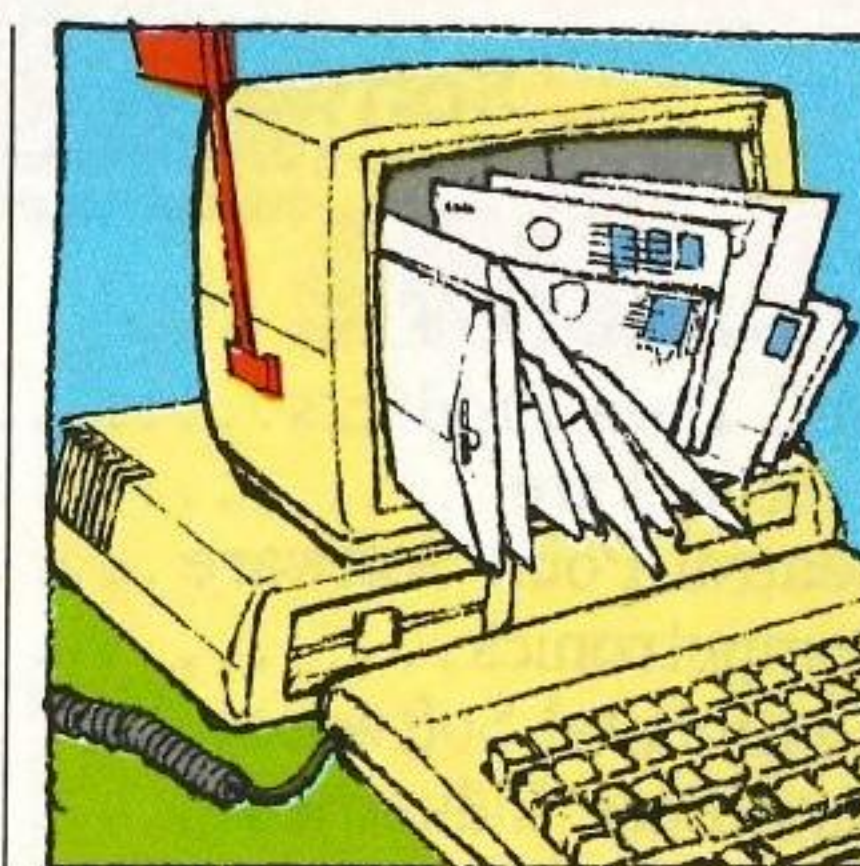
Last Word

GRAPHICS CONFERENCE SEEKING PAPERS

THE NATIONAL COMPUTER Graphics Association has announced the call for papers in advance of its Computer Graphics '85 annual conference and exposition to be held in Dallas, Tex., next April. The 6500-member association is dedicated to developing, promoting and improving computer graphics applications in business, industry, government, science and the arts.

The conference will cover the range of graphics technology from personal computers to mainframes. Tutorials and technical sessions will focus on the application of computer graphics to business and industry.

"Everyone recognizes that the computer graphics industry is changing rapidly," says conference director Roy Bower, vice-president and general manager of Houston



Instrument. "One of the goals of the association, and of this conference, is to help people keep abreast of these changes."

Sessions will focus on architectural and engineering computer graphics, artificial intelligence, biomedical applications, business graphics, computer-integrated manufacturing and other topics.

Interested individuals should contact NCGA for a copy of the official call for papers brochure. For more information: National Computer Graphics Assoc., 8401 Arlington Blvd., Suite 601, Fairfax, VA 22031; (703) 698-9600.

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CORPORATE SOFTWARE, INC., of Waltham, Mass., is offering a complete line of products, services and support geared specifically to the requirements of corporations trying to find the right software for their IBM Personal Computers.

"Existing channels of PC software simply do not meet the needs of large corporations," says Dr. Michael Hammer, vice-chairman of CSI. "With the rapid rise and fall of software programs and vendors, just identifying and selecting appropriate software is a major difficulty. Corporate Software has been formed to address these problems."

Among Corporate Software's services are presale

advice, a selected product line, technical support and end-user training. CSI's sales staff works directly with the internal corporate organization responsible for purchasing and supporting personal computers and software. The company also provides clients with a "Corporate Software Guide" which is updated quarterly. "The Guide is more than just a listing of our product line," says Morton Rosenthal, Corporate Software's chairman and vice-president of marketing. "It is essentially a compilation of our product evaluations and how we see the various products relative to each other."

For more information, contact Corporate Software, Inc., at 235 Bear Hill Road, Waltham, MA 02154 or call (617) 890-5350.

Software

PRODUCTIVITY

ABC Data Products.....	30
Ashton Tate.....	82-83
Central Point Software.....	48
Computronics.....	17
Continental Software.....	10
Data Base Industries.....	24
Flower Soft.....	28
Good Software.....	21,23,25
Guaranteed Software.....	113
Hayes Microcomputer Products, Inc.....	8,9
IBM Corp.....	6,7
Knowledgeware.....	25
Leading Edge.....	Cov 2,1
Megahaus.....	4
Micropro International.....	42
Microstuf.....	64
Pickles and Trout.....	19
Realty Software.....	25
Research Data Systems.....	22
Spectrum Software.....	116
Systems Plus.....	27

PERFORMANCE

ABC Data Products.....	30
Artificial Intelligence.....	28
BPI.....	60
Bourbaki.....	54
Flower Soft.....	28
Good Software.....	21,23,25
Guaranteed Software.....	113
IBM Corp.....	6,7
Practicorp International.....	90,91
Writing Consultants.....	84

LEARNING

Computerose.....	14
Creative Software.....	63
Davidson & Associates.....	28
Eric Software.....	12
IBM Corp.....	6,7
Research Data Systems.....	22
Spinnaker Software.....	2
Weekly Reader.....	32-33

LEISURE

IBM Corp.....	6,7
Infocom.....	36
Marathon Software.....	16

Professor Jones.....	28
Research Data Systems.....	22
Weekly Reader.....	32,33

Accessories

ABC Data Products.....	30
CompuServe.....	31
Dennison Computer Supplies ..	cov3
Dupont.....	23
Dysan.....	cov4
Infoserve.....	25
Memorex.....	76,77
Street Electronics.....	29

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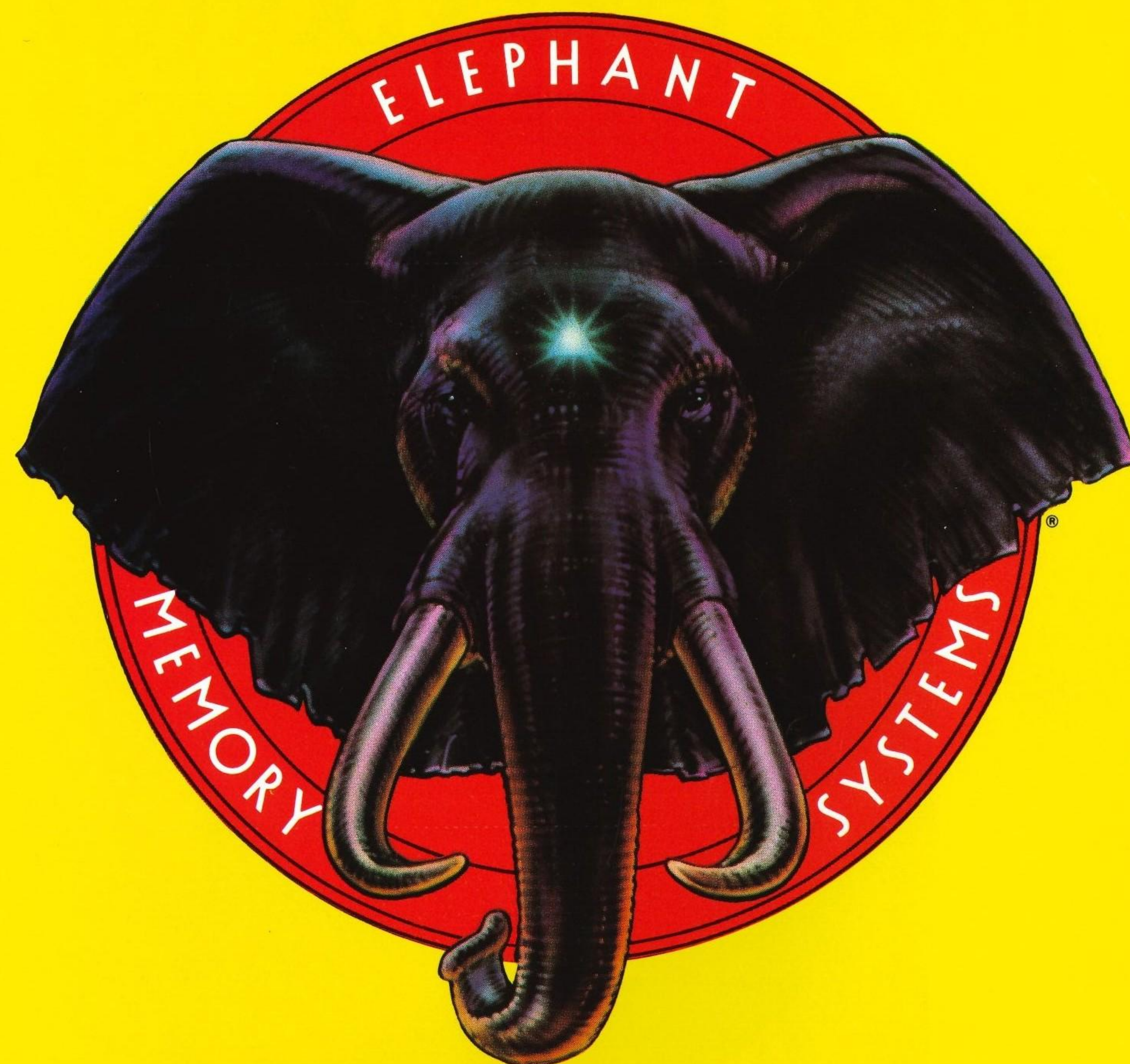
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